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THE

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Thorough practical Management of the

Pleasure Ground and *Flower Garden*;

SHRUBBERY, NURSERY, TREE PLANTATIONS, AND HEDGES;

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With the most approved PLANS for the whole fully described:

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METHODS of PROPAGATION and CULTURE.

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The whole arranged in botanical Order, with all the modern Improvements, proper Seasons and Methods for performing the Work of each Department all the Year, and copious Directions, according to the most approved Methods now in Practice, necessary to form a COMPLETE Gardener.

By SAMUEL FULLMER,
(Horse-ferry-Road, near Chelsea,)
AND OTHER GARDENERS.

LONDON,

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☞ The Kitchen and Fruit Gardener to be had as above.

PREFACE.

HAVING, in the first volume, *agreeable to a new and improved plan*, given accurate and ample practical directions for the thorough management of the Kitchen and Fruit Garden, as being more immediately connected than any of the other departments of horticulture, and for the general part mostly comprised within the same division; and in consideration that many persons are possessed of only a kitchen and fruit garden, it was judged eligible to publish a volume treating only of these two principal branches; and which we are happy to experience has been favoured with the public's approbation, as may be judged from the great demand for the book, as well as by many favourable hints both from gentlemen and gardeners.

The Author therefore flatters himself that his labours in this his second volume, comprehending all the other divisions of gardening, arranged and explained under their different heads, will be found no less entitled to public favour, as every exertion has been used to render it of equal utility, agreeable to the most extensive practical experience in all the various branches relative to the Pleasure Ground, Flower Garden, Shrubbery, Nursery, and all kinds of ornamental and Forest Tree Plantations; together with the Green-house and Hot-house; exhibiting also botanical catalogue arrangements of all the proper trees, plants, and flowers for each of these departments of gardening, under their respective heads for which they are calculated; with hints of

their nature, temperament, uſes, propagation, planting and general culture in each reſpective department.

We preſume by this improved method of arrangement of the different departments under diſtinct heads, with the plants adapted to each diviſion, collected under ſeparate claſſes, according to their nature of growth and temperament, and each claſs arranged under its reſpective department; it will prove a conſiderably more uſeful and inſtructive work in practical gardening, than any book of the ſize ever before publiſhed, as it is calculated to promote both a general knowledge of every department of gardening, and of all proper plants requiſite for each; diſplayed in ſtrict botanical arrangement, agreeable to the lateſt *Linnæan* improvements, with the botanic names in Latin and Engliſh of each genus, and the Engliſh, botanic, and moſt generally known names of the ſpecies in each genus; ſo that it will alſo convey botanical knowledge in regard to arrangement of all the cultivated plants in the world.

The Author hopes his readers will pardon any deficiency in point of grammatical language, as he has endeavoured to explain himſelf in as plain and intelligible a manner as poſſible, agreeable to his profeſſion as a practical gardener.

CONTENTS.

CONTENTS.

First,

PLEASURE

PLEASURE GROUND

AND

FLOWER GARDEN;

THE

GENERAL PLAN,

Proper TREES, SHRUBS, and FLOWERS,

AND

METHOD OF CULTURE.

A General Pleasure Ground, being a grand district of gardening, appropriated wholly for pleasure, amusement, observation, and as a principal ornament to a country seat; is composed of spacious grass lawns, elegant plantations, ornamental walks, pieces of water, &c. diversified in a curious representation of art and nature, so artfully varied in the general scene, that new varieties continually present themselves in the excursion through the different compartments; consisting of ornamental tree plantations and shrubberies; comprising beautiful flowering shrubs and evergreens, and compartments of elegant flowers: comprehending not only the space within the limits of the garden, but all ornamental plantations extended to any adjacent

out-grounds, parks, paddocks, &c. may be considered as appertaining to the pleasure ground.

Modern pleasure grounds are so planned in their design, as to exhibit a grand imitation of nature; discovering at first entrance a spacious grass lawn, bounded by irregular clumps and groves of tree and shrub plantations, with serpentine walks winding through them, having the internal parts also formed into grand opens, spacious walks, and clumps and thickets of shrubs, trees, and flowers, in rural sweeps of various dimensions.

So that in the general plan, first a spacious lawn of grass ground is extended from the main front of the dwelling-house, or both fronts, if there are two, and that the situation admits of a lawn both ways, of larger or smaller dimensions, proportionable to the extent of the garden, park, &c. from half a quarter of an acre or less, to one, two, or three, to forty or fifty acres or more; each side boundary adorned with elegant compartments of tree and shrub plantations, disposed in irregular sweeps, and winding in concave and convex curves and projections, in a natural imitation, in clumps, groves, thickets, &c. with intervals or open spaces of grass ground between, communicating with the main lawn and interior divisions, and as prospects towards the open country, making the homeward part of the plantation inclined towards the habitation, that company may the sooner arrive under shelter and shade of the trees when required; having tracts for serpentine gravel walks, winding under shade of the plantation; commanding at intervals open views of the lawn, and other parts of the ground and the adjacent fields; having the boundary parts of the lawn laid out in the same rural manner.

For example, the boundary of the lawn being adorned with clumps and running plantations, &c. of the most elegant shrubs and trees, or occasionally also towards the extreme parts, if no good prospect beyond,

beyond, or that the ſituation of the ground is ſuch, that ſome principal diviſions of the garden commence at the termination of the lawn; and from which boundary plantations, are continued the internal works in a variety of rural diviſions of ſpacious walks, and opens of graſs ground compartments, ſhrubbery clumps, wilderneſs plantations, groves, groups, thickets, avenues, receſſes, elegant flower compartments, and rural pieces of water where practicable; and on graſs ground, have trees in ſtraight rows, trees diſpoſed ſingly, or by two, three, or more together; each compartment deſigned in various forms in elegant irregular curves, &c. in a rural manner; varying the ſize, figure, and proſpect of the different walks, opens, clumps, &c. alloting a commodious ſpace near the dwelling for a flower garden, divided into compartments, either in plain parallel beds and borders three or four feet wide, with eighteen inches or two feet alleys between the beds; or may lay out ſome part in the Chineſe parterre way; either of which allot for the culture of the more curious flowers; the others being diſpoſed about the pleaſure ground, both in the fronts of ſhrubbery clumps, and ſome in clumps by themſelves, to exhibit the greater diverſity.

And generally towards the outer boundary fence of the pleaſure ground, park, &c. is continued running plantations of trees and ſhrubs, and large flower plants; which plantations being in various ſweeps and curves towards the garden, &c. and of proper width to admit of a ſerpentine gravel walk winding through the middle for private and ſhady walking; varying the plantation in different degrees of ſhade and light, with occaſional breaks for admitting of proſpect from the walk towards the garden and open country.

Ha ha's, or ſunk fences, are alſo contrived at the extremity of outward-extended lawns, ſpacious walks and avenues, &c. to extend the proſpect where deſirable.

Spacious avenues and grand walks of ſtately trees in rows, give an air of grandeur and magnificence.

Hedge-work for ornament is now rarely introduced, but might ſtill be admitted in moderation, ſo as to have an agreeble effect, trained both in cloſe hedges, and in arches, porticos, galleries, &c. being neatly clipped twice every Summer.

Parterres were common in ancient gardening, which were a ſort of flower ground divided into various formal figures in numerous ſmall partitions; but in modern gardening, Chineſe parterres are more in taſte, conſiſting of ſtraight beds, borders, and alleys in different directions; but parterres in the ancient ſtyle, conſiſted of beds and alleys, in long ſquares, circles, ſcrolls, and flouriſhes, labyrinths, or mazes; and ſometimes formed into coats of arms, &c. having all the compartments edged with dwarf box, and laying the alleys ſome with red ſand or gravel, others with white, ſome with ſhells, &c. and the beds formed ſwelling; and planted with the choicer ſorts of flowers and ſmall ſhrubs.

But extenſive pleaſure grounds are embelliſhed with numerous other ornaments for pleaſure and variety, as terrace or raiſed walks, high terraces for proſpect; grand graſs ſlopes, amphitheatres, mounts, grottos, caves, hermitages, temples, ornamental bridges over pieces of water, &c.

The lawns and other open ſpaces deſigned for graſs ground, bounding the gravel walks, ſhrubbery, clumps, &c. may be formed into graſs, either by ſowing graſs ſeed, or by laying them with graſs turf cut from a cloſe-paſtured common or waſte, which is preferable to ſeed, but too expenſive in conſiderable grounds.

The gravel walks may be from ſix to twenty or thirty feet wide, according to the extent of the premiſes, and the different parts of the ground, and laid

laid with the beſt high-coloured gravel that can be obtained; and ſome may be of ſand, but the grand walks and thoſe for principal walking, ſhould generally be gravel, from ſix inches to a foot thick, neatly laid and well rolled.

The compartments for the clumps or plantation, of trees, ſhrubs, flowers, &c. ſhould be digged for their reception; but thoſe for groves, groups, avenues, and grand walks, deſigned to ſtand on graſs ground, need have only apertures digged at certain diſtances where each tree is to ſtand.

In planting the trees and ſhrubs, ſhould diſpoſe the deciduous and evergreens moſtly in ſeparate clumps, may alſo diverſify the deciduous clumps with ſome evergreens, to cauſe the greater variety, and to render the plantation of more lively appearance in Winter; planting ſome compartments entirely of trees, others of ſhrubs, and ſome of herbaceous flower plants, and in others have both trees, ſhrubs, and flowers; being careful to arrange the taller growers behind, and the lower ones more forward to the loweſt in front, in a regular gradation of height.

But in ſmall gardens, where there is not proper ſcope for various rural imitation; either have only a ſmall lawn at the entrance from the houſe, bounded by ſhrubbery work, in clumps, &c. with a ſerpentine gravel walk through the ſhrubbery or along the ſides; or ſometimes having no lawn, extend a grand walk immediately from the front door through the middle of the garden, with a ſpacious border on each ſide for flowers and ſhrubs, and a walk alſo continued acroſs and round the garden, verged likewiſe with handſome flower borders; or in very ſmall grounds, have only a walk either along the middle, or all round, furniſhed on each ſide with a handſome broad border for flowering plants; and in either method, if a

collection of prime flowers are intended, ſhould form one or more of the internal, quarters into regular parallel beds of three or four feet width, with one or two feet wide alleys between, having the borders and beds edged with box or thrift, pinks, &c. or in default of either, the edge worked up very firm, and cut even with the ſpade.

With regard to the proper trees, ſhrubs, and flowers, for the decoration of the various compartments of the pleaſure ground, &c. ſee them in the following arrangements, exhibited under diſtinct heads or claſſes. The *Firſt Claſs* comprifing all the Tree and Shrub kinds. *Second*, the Herbaceous fibrous-rooted perennial Flower Plants. *Third*, the Bulbous and tuberous-rooted Tribe, &c. And *Fourth*, the Annual Flowers, under three heads, viz. The Tender; Leſs tender, or hardier; and the Hardy kinds: together with the method of raiſing, order of planting, and general culture of the plants under each diſtinct claſs.

In each claſs or arrangement, the different hardy ſpecies are collected under the name of the genus to which they properly belong, agreeable to the botanic *characters* of the flower, conformable to the *Linnæan* Syſtem of Botany, in which all plants whoſe flowers bear exactly the ſame *characters* are conſidered as ſpecies or relations of one family or genus, as hereafter more fully explained in its proper place; ſo that all the ſpecies arranged under each diſtinct genus, have all their flowers, fruit, and ſeeds ſimilar.

FIRST

FIRST CLASS:

COMPRISING ALL THE

HARDY TREES AND SHRUBS,

FOR ADORNING THE

PLEASURE GROUND

AND ALL

ORNAMENTAL PLANTATIONS,

IN

Alphabetical Arrangement, under the

Botanic Name of the FAMILY or GENUS to which each Species belong.

THE tree, ſhrub, and herbaceous flower plants, for the decoration of the Pleaſure Ground and Flower Garden are very numerous, as may appear by the following arrangements, firſt of the tree and ſhrub kinds, then of the herbaceous tribe, for the greater facility of diſtinction; and as moſt of them are now chiefly known in the nurſeries by the generic or botanic Latin name of the genus, we have ranged them accordingly: all the ſpecies of each family exhibited together at once under their proper genus by its botanical title; with ſhort

ſhort hints whether they are deciduous, or evergreen tree or ſhrub kinds, or propagated by ſeed, ſuckers, layers, cuttings, &c. and for particulars of each of theſe methods of propagation, ſee the article Propagation at the end of this arrangement.

Note, Deciduous trees, &c. are ſuch as caſt their leaves in Winter; and evergreens, which remain in leaf the year round.

ACER—*Maple Tree*—Common Smaller Maple—Greater, or Sycamore Tree—Variegated Sycamore Tree—Plane-tree-leaved Maple—Jagged Plane-tree-leaved—Penſylvanian—American Sugar Maple—Scarlet-flowering—Sir Charles Wager's Scarlet flowered—Aſh-leaved—Cretan Maple—Tartarian Heart-leaved—Italian Cut-leaved. (Deciduous trees.) By ſeed, layers, cuttings, &c.

ÆSCULUS—*Horſe Cheſnut*—Common—Variegated-leaved—Dwarf Scarlet-flowered—Yellow-flowered. (Deciduous tree kinds.) By the nuts.

AMORPHA—*Baſtard Indigo*—Common Shrub Amorpha. (Evergreen.) By layers, cuttings, and ſeeds.

AMYGDALUS—*Almond Tree, Peach*, &c.—Common Almond—Sweet Almond—White-flowered—Silvery-leaved Oriental—Dwarf Almond—Double-flowered Dwarf—Peach Tree—Double-flowered Peach—Dwarf Peach. (Deciduous trees and low ſhrubs.) By ſeed, budding, ſuckers, &c.

ANDRO-

ANDROMEDA—*(Andromeda)*—Tree Andromeda—Calyculated, or Double-cupped—Paniculated—Cluſtered-ſpiked, called Branched Andromeda—Mountain Poly Andromeda, called Roſemary-leaved—Myrtle-leaved—Shining-leaved—Iron-coloured—Axillary-flowered—Pill-bearing—Globuliferous—Cantabrian Heath. (Moſtly deciduous ſhrubs.) By ſuckers, layers, ſeed, &c.

ANNONA—*Papaw Tree*, or Cuſtard Apple—Trifid-fruited Carolina Annona—Smooth-fruited. (Deciduous trees.) By ſeed.

ARALIA—*Berry-bearing Angelica Tree*—Prickly-ſtalked—Naked-ſtalked: (Deciduous ſhrub.) By ſeed and cuttings of the root.

ARBUTUS—*Strawberry Tree*, or *Arbutus*—Common Arbutus—Double-flowered—Red-flowered—Waved-leaved—Yellow-berried—Andrachne, or Eaſtern Arbutus—*Uva Urſi*, or Bearberry—Alpine Arbutus. (Evergreen trees and ſhrubs.) By ſeed, layers, and cuttings.

ASCYRUM—*St. Peter's Wort*—*Crux-Andreæ*, or St. Andrew's Croſs—*Hypericoides*, or Flat-branched Virginia *Aſcyrum*—Hairy-leaved Upright. (Dwarf deciduous ſhrubs.) By off-ſet ſuckers and cuttings.

ARISTOLOCHIA *arboreſcens*—Tree Birthwort. (Deciduous ſhrub.) By ſeed, cuttings, and roots.

ARTEMESIA *Arbotanum*—*Southern-wood*. (Deciduous ſhrub.) By cuttings and ſlips.

ARTE-

ARTEMESIA *arborescens*——-Tree Wormwood. (Evergreen shrub.) By cuttings and layers.

ASTRAGALUS-*Tragacantha*——*Goat's-Thorn*, or Tragacanth Shrub. (Deciduous.) By seed, slips, and cuttings.

ATRAGENE *Alpina*——-Alpine Geranium-leaved Clematis. (Undershrubby.) By layers, cuttings, and suckers.

ATRIPLEX—*Sea Purslane Tree*—Deltoid-leaved—Narrow oboval-leaved. (Evergreen shrub.) By cuttings.

AZALEA—*American Honeysuckle*—Viscous White-flowered——Late White——Red Naked-flowered—Late Red—Procumbent-branched of the Alps—Lapland Spotted-leaved. (Deciduous shrubs.) By layers and suckers.

BACCHARIS *halimifolia*—*Plowman's Spikenard*—Sea-Purslane-leaved, or Virginia Groundsel Tree. (Evergreen.) By layers, cuttings, and seed.

BERBERIS—*Berberry-Shrub*—Common Red-fruited—Stoneless Red-fruited——White-fruited——Canada Broad-leaved—Cretan Box-leaved. (Deciduous.) By suckers, layers, cuttings, and seed.

BETULA—*Birch Tree* and *Alder*—Common White Birch—Black Virginia—Lentis-twigged, or Poplar-leaved——Canada——Dwarf Alpine—*Alnus*, or Alder Tree——Glutinous-leaved Alder——Hoary-leaved—American Long-leaved—Dwarf. (Deciduous.) By seed and layers; the Alders also by cuttings.

BIGNO-

BIGNONIA—*Trumpet Flower*, or Bignonia—Catalpa, or Tree Bignonia—Climbing Ash-leaved Scarlet—Evergreen Climbing—*Unguiscati*, or Four-leaved Climbing.—(Deciduous and evergreen.) By layers, cuttings, and seed.

BUPLEURUM *fruticosum*—Shrubby Æthiopian Hartwort. (Evergreen.) By seed, cuttings, and layers.

BUXUS—*Box Tree*—Broad-leaved Tree Box—Narrow-leaved—Gold-striped-leaved—Silver-striped—Gold and Silver-edged-leaved—Dwarf Undershrubby Box—Variegated-leaved—Myrtle-leaved. (Evergreen.) By layers, cuttings, slips, suckers, and seed.

CALYCANTHUS—*Carolina Allspice Tree.* (Deciduous shrub.) By layers and seed.

CARPINUS—*Hornbeam Tree*—Common Hornbeam—Variegated-leaved—Virginian—Eastern—Ostrya, or Hop Hornbeam. (Deciduous trees.) By seed and layers.

CASSINE *Paragua*—South Sea Tea Shrub. (Evergreen.) By layers and seed.

CEANOTHUS *Americana*—American New Jersey Tea Tree. (Deciduous.) By layers and seed.

CELASTRUS—*Staff Tree*, or Celastrus—Climbing Celastrus—Bullated Upright Celastrus. (Evergreen shrubs.) By layers and seed.

CELTIS—*Nettle Tree*—South European Black-fruited—American Purple-fruited—Eastern Yellow-fruited. (Deciduous trees.) By seed, layers, and cuttings.

CEPHALANTHUS *occidentalis*—American Button Tree. (Deciduous shrub.) By seed, layers, and cuttings.

CERCIS—*Iudas Tree*—European Smooth-leaved—Canada Downy-leaved. (Deciduous shrubs.) By seed and layers.

CHIONANTHUS—*Fringe*, or Snow-drop Tree—Broad-leaved——Narrow-leaved. (Deciduous.) By seed and layers.

CISTUS—*Rock-Rose*, or Cistus—Hairy Round-leaved Male—Hoary Long-leaved Male—Bay-leaved—Poplar-leaved—Waved-leaved—Sea Purslane-leaved——Long Sea Purslane-leaved——Ladanaferous, or Common Gum *Cistus*—Cretan Gum *Cistus*—Montpelier Linear-leaved—Olive-leaved of Montpelier—Sage-leaved—Willow-leaved—White Downy-leaved—Rosemary-leaved Spanish—Italian Spreading-branched—Apennine Hairy Downy-leaved—*Helianthemum*, or Common Dwarf—Hoary-leaved Dwarf—Marum-leaved Dwarf—Squamous-leaved—Thyme-leaved.—(All evergreen shrubs, with round, oval, and spear-shaped leaves; and many ornamental flowers.) By seed, cuttings, and layers.

CLEMATIS—*(Climber)* or *Virgin's Bower*—*Viticella*, or Common Blue-flowered—Red-flowered—Double-flowered—Oriental, or Eastern Yellow——Curled-flowered Carolinian——Virginian White-

White-flowered—*Viorna*, or Carolinian Purple—*Vitalba*, Wild Climber, or Traveller's Joy—Dioecious-flowered American—Flammula, or Montpelier Climber—Cirrhose Evergreen Spanish. (Deciduous, one evergreen.) By layers and cuttings.

CLETHRA-*alnifolia*—Alder-leaved *Clethra*—Narrow-leaved. (Deciduous shrub.) By suckers, layers, and seed.

CNEORUM—*Widow-Wail.* (Evergreen shrub.) By seed, cuttings, and layers.

COLUTEA—*Bladder Senna*—Tree Bladder Senna—Pocock's Bright Yellow-flowered—Oriental Blood-coloured—Shrubby Æthiopian Scarlet.—(Deciduous shrubs.) By seed and layers.

COMARUM *palustre*—Marsh Cinquefoil. (Deciduous shrub.) By suckers and slipping the roots.

CORIARIA *myrtifolia*—Myrtle-leaved Sumach. (Deciduous shrub.) By seed, layers, cuttings, &c.

CORNUS—*Cornel Tree*, Cornelian Cherry, or Dogwood—Male, or Cornelian Cherry—Bloody-Twig, or Dogwood—Virginia Dogwood—Female Narrow-leaved—White-leaved American—Blue-berried American—White-berried Pensylvanian. (Deciduous tree and shrubs.) By seed, layers, and cuttings.

CORONILLA—*Jointed-podded* Colutea—Coronated Lesser Shrubby—Silvery of Crete—Glaucous-leaved Maritime—Rushy of Marseilles—*Emerus*, or Scorpion Senna—Dwarf *Emerus*. (Deciduous shrubs.) By seed, layers, and cuttings.

CORYLUS—*Hazel Nut Tree*, *Filbert*, &c.—Common Hazel Tree—Filbert—Barcelona Nut—Great Cob-nut—Long Nut—Cluster Nut—*Colurna*, or Byzantine Nut. (Deciduous trees and shrubs.) By nuts, suckers, and layers.

CRATÆGUS—*Wild Service Tree*, *Hawthorn*, &c.—*Aria*, Wild Service, or White Beam Tree—Maple-leaved—*Oxycantha*, or Common Hawthorn—Double-flowered—Scarlet-berried—Yellow-berried—White-berried—Glastonbury-Thorn—*Azarolus*, or Azarole Thorn—Jagged-leaved Azarole—*Crus-galli*, or Cockspur Thorn—Scarlet-fruited Cockspur-Thorn—Downy Gooseberry-leaved—Green Smooth-leaved, without thorns. (Deciduous tree and shrubs.) By seed and layers.

CUPRESSUS—*Cypress Tree*—Evergreen Upright—Evergreen Horizontal—Evergreen Portugal, or Cedar of Goa—*Thyoides*, or Arbor-vitæ-leaved—Evergreen American, or White Cedar—Distichous-leaved Deciduous. (Evergreen and deciduous trees.) By seed, cuttings, &c.

CYTISUS—*Tree Trefoil*, or *Cytisus*—*Laburnum*, or Greater Deciduous *Cytisus*; comprising Broad-leaved—Narrow-leaved—Long-spiked—Short-spiked—and Variegated-leaved—Black Austrian *Cytisus*—Sessile-leaved, called *Cytisus Secundus Clusii*—Hairy-cupped Evergreen—Austrian Upright

right Evergreen. (Deciduous trees and evergreen ſhrubs, with trifoliate leaves.) By ſeed, layers, and cuttings.

DAPHNE—*Spurge Laurel*—*Laureola*, Wood Laurel, or Common Spurge—Variegated-leaved——*Mezereum*, or Mezereon, the Pale-red-flowered—Deep-red-flowered—White-flowered—Variegated-leaved—Alpine Downy-leaved *Daphne*—*Tarton-raira*, or Silvery *Daphne*. (Low evergreen and deciduous ſhrubs.) By ſeed, layers, and ſuckers.

DIOSPYROS—*Date Plum*—Indian Date Plum—Piſhamin Plum. (Deciduous trees.) By ſeed,

DIRCA—*Leatherwood*—Marſh Virginia Leatherwood. (Deciduous ſhrub.) By layers.

ELÆAGNUS—*Wild Olive*—Narrow-leaved—Thorny, with elliptic leaves. (Deciduous ſhrubs.) By layers and cuttings.

EMPETRUM—*Crow-Berry*—Black-berried Heath. (Dwarf deciduous ſhrub.) By ſeed, layers, and off-ſets.

EPHEDRA—*Shrubby Horſe-tail*—Diſtachyous, or with catkins in pairs—Monoſtachyous, or with ſolitary catkins. (Dwarf evergreens.) By off-ſets and ſuckers.

EPIGÆA *repens*—*Trailing Arbutus*. (Deciduous.) By rooting ſtalks.

ERICA—*Heath*—Common, the Purple-flowered—White-flowered—*Titralix*, or Four-leaved—Aſh-coloured—Ciliated Three-leaved—Multiflorous

Five-leaved——Paniculated Æthiopian——Irish Alternate-leaved——Beesom French Heath——Greenish-purple-flowered——Umbellate-flowered—Tree, or Great White Heath.——(Dwarf and large shrubs.) By off-set suckers and layers.

EUONYMUS—*Spindle Tree*—European Deciduous *Euonymus*; comprising Broad-leaved—Narrow-leaved—Variegated—Red-berried—White-berried—American Evergreen *Euonymus*—Carolina Long-leaved—Warted. (Large deciduous and evergreen shrubs.) By seed, layers, and cuttings.

EUPHORBIA *amygdaloide*—Almond-leaved Shrubby *Euphorbia*. (Deciduous.) By seed, layers, cuttings, and suckers.

FAGUS—*Beech* and *Chesnut Tree*—Common Beech—Purple-leaved—Variegated-leaved—Common Chesnut Tree—*Pumila*, Dwarf Chesnut, or Chinquepin. (Deciduous.) By nuts, layers, &c.

FICUS—*Fig Tree*—Common—Divided-leaved. (Deciduous.) By layers, suckers, and cuttings.

FOTHERGILLIA——*Fothergillia*. (Deciduous.) By seed, layers, cuttings, &c.

FRAXINUS—*Ash Tree*—Common—Striped-leaved Common—Black American—White American—Red American—Calabrian Manna Ash—Flowering Ash. (Deciduous trees.) By seed, &c.

GAULTHERIA *procumbens*—Procumbent *Gaultheria*. (Deciduous.) By layers, cuttings, and suckers.

GENISTA—*Dwarf Broom*—English Dwarf Broom, or Petty Whin—Arrow-shaped Jointed Broom—Dyer's Broom—Lucca Broom—Flowering Spanish

nish Dyer's Broom—Portugal Aphyllous Broom ——Tridented-leaved——Upright Montpelier Broom. (Evergreen and deciduous shrubs.) By seed, &c.

GINKGO *biloba*—Bilobated Maiden-hair Tree, or Japanese *Ginkgo*. (Deciduous.) By layers, cuttings, seed, &c.

GLEDITSIA—*Triple-thorned Acacia*—Common Three-thorned——Water Acacia, with fewer thorns. (Deciduous trees. with winged leaves.) By seed.

GLYCINE—*Carolina Kidney Bean Tree*—Shrubby Climbing. (Deciduous.) By seed and layers.

GUILANDIA—*Bonduc*, or *Nikar Tree*—Dioecious of Canada. (Deciduous.) By cuttings and layers.

HALESIA——*Halesia*——Quadrangular-fruited—Two-angular-fruited. (Deciduous large shrubs.) By seed and layers.

HÆMAMELIS—*Witch-Hazel*—Virginian Shrubby. (Deciduous.) By seed and layers.

HEDERA—*Ivy Tree*—*Helix*, or Common Evergreen Ivy—Silver-striped-leaved—Gold-striped—Quinquefolious, or Five-leaved Deciduous Ivy, or Virginia Creeper. (Evergreen and deciduous climbers.) By layers, cuttings, seed, &c.

HIBISCUS—*Syrian Shrubby Mallow*, or *Althæa Frutex*—Common Althæa Frutex; comprising White-flowered—Red-flowered—Pale-purple—Deep-purple—Yellow-flowered——Variegated-flowered—Silver-striped-leaved—Gold striped. (Deciduous shrubs.) By layers and cuttings.

HIPPOPHÆA—*Sea Buckthorn*—*Rhamnoides*, or Willow-leaved European—Canada Oval-leaved. (Deciduous ſhrubs.) By ſuckers, layers, and cuttings.

HYDRANGEA—*Hydrangea*—Shrubby of Virginia. (Deciduous.) By off-ſets, ſuckers, &c.

HYPERICUM—*St. John's-wort*—Stinking Shrubby—Dwarf Stinking—Inodorous, or Scentleſs—Variegated-leaved—Canary St. John's-wort—*Aſcyron*, or Dwarf American—Kalmian of Virginia—Olympian Mountain—Proliferous—*Androſæmum*, Tutſan or Park-leaves. (Deciduous ſhrubs.) By ſeed, ſuckers, and off-ſets.

JASMINUM—*Jaſmine Tree*—Common White-flowered—Striped-leaved—Shrubby Yellow-flowered—Dwarf Shrubby Italian. (Deciduous trailing ſhrubs.) By layers and cuttings.

ILEX—*Holly Tree*—*Aquifolium*, or Common Holly Tree; compriſing Green Prickly-leaved—Smooth-leaved—Sawed-leaved—Hedgehog Prickly-leaved—White Blotched-leaved—Yellow Blotched-leaved—Gold-edged-leaved—Silver-edged-leaved—Mottled-leaved—Cream-coloured—Yellow-leaved—White-leaved—Copper-coloured—Painted Lady—Chimney-ſweeper's Holly—Box-leaved—Red-berried—White-berried—Yellow beried—*Caſſinoide*, or Carolinian Dahoon Holly. (Evergreen tree kinds.) All by ſeed, and all the varieties of the common ſort continued only by budding and grafting.

ITEA—*Itea*—Virginian Itea—Narrow-leaved. (Deciduous ſhrubs.) By ſeed and layers.

IVA—*False Jesuit's-Bark Tree*—Shrubby American Iva. (Deciduous shrub.) By layers and cuttings.

JUGLANS—*Walnut Tree*—Common Walnut—Black Virginia——White Virginia, or Hickery Nut——Shag Bark Hickery——Small Hickery—Ash-coloured American. (Large deciduous trees.) By the nuts.

JUNIPERUS—*Juniper Tree*, Cedars, and Savin—Common Shrubby Juniper—Larger Swedish Juniper—*Oxycedrus*, or Spanish Juniper—Frankincense Blue-berried Spanish Juniper—Virginia Red Cedar—Lycian Cedar—Phœnician Cedar—Bermudian Cedar——*Sabina*, or *Savin*—Common Spreading—Upright Portugal—Variegated-leaved. (Evergreen shrubs and trees.) By seed mostly; also by layers and cuttings, especially the Savins.

KALMIA—*Dwarf Laurel*, or *Kalmia*—Broad-oval-leaved—Narrow-lanceolate-leaved. (Evergreen shrubs.) By seed, suckers, and layers.

LAVANDULA—*Lavender*——*Spica*, or Common Spiked flowered—Narrow-leaved—Broad-leaved—Blue-flowered—White-flowered—*Stoechas*, or French Lavender. (Low undershrubs.) By slips, cuttings, and layers.

LAVATERA—Venetian Mallow, or *Lavatera*—Tree Mallow——Seven-angled-leaved——Olbian Shrubby Five-angled—Shrubby Three-lobed—Portugal Shrubby Seven-angled. (Strong, tall, single stems, with large soft leaves.) By seed.

LAURUS—*Bay Tree*—Noble, or Common Bay—Broad-leaved—Narrow-leaved—Waved-leaved Striped-leaved—Double-flowered—*Sassafras Tree*—*Benzoin*, or Benjamin-Tree—*Borbonia*, or Carolina Blue-berried Bay. (Evergreen and deciduous trees.) By seed, layers, and suckers.

LEDUM—*Marsh Cistus*, or *Wild Rosemary*—Common Marsh Cistus—Dwarf—Broad-leaved—Thyme-leaved. (Low undershrubs.) By offsets, suckers, &c.

LIGUSTRUM—*Privet*—Common Privet—Striped-leaved—Evergreen Italian—Broad-leaved. (Deciduous and evergreen shrubs.) By seed, suckers, layers, and cuttings.

LIQUIDAMBAR—*Sweet-Gum Tree*—*Styraciflua*, or Storax Tree, with palmated leaves—Spleenwort-leaved *Liquidambar*. (Deciduous trees.) By seed and layers.

LIRIODENDRON *Tulipifera*—Tulip Tree of Virginia. (Large deciduous tree.) By seed.

LONICERA—*Honeysuckle*—*Periclymenum*, or Common Climbing Honeysuckle; comprising the eight following varieties; Common White-flowered—Red-flowered—Oak-leaved—Striped Oak-leaved—Dutch, or German Large Red—Dutch Long-flowering—Dutch Late-red—Dutch Evergreen Honeysuckle—*Caprifolium*, or Early White Italian—Red Italian—Yellow Italian—Late Red Italian—Evergreen Red Italian—*Sempervirent*, or Evergreen Great Scarlet Trumpet-flowered of Virginia—Smaller Scarlet flowered. —The following grow more upright; Alpine Upright Red-berried—Blue-berried Upright—Black-berried Upright—Tartarian Upright—

Xylosteum

Xylosteum, or Fly Honeysuckle—Pyrenæan Divaricated-branched—*Diervilla*, or Dwarf Upright Yellow—Maryland Upright Scarlet—*Symphoricarpos*, or St. Peter's-wort. (Deciduous and evergreen shrubs.) By layers, cuttings, suckers, and seed.

LOTUS—*Bird's-Foot Trefoil*—Upright Smooth—Hairy Upright—*Dorycnium*, or White Austrian. (Low undershrubby plants.) By seed, cuttings, and layers.

LYCIUM—*Box-Thorn*—African Linear-leaved—Willow-leaved African—Barbary Lanceolate Thick-leaved—Chinese Trailing Broad-leaved—Trailing Narrow-leaved Chinese. (Evergreen and deciduous shrubs.) By cuttings, layers, and seed.

MAGNOLIA—*Laurel-leaved Tulip Tree*, or *Magnolia*—Grandiflorous Evergreen Magnolia—Tripetalate, or Umbrella Magnolia—Glaucous-coloured-small-leaved—Acuminated Long-leaved. (Evergreen and deciduous trees.) By seed, layers, and cuttings.

MENISPERMUM—*Moon-Seed*—Canada Round-leaved—Virginian Lobated-leaved. (Climbing shrubs.) By layers, suckers, and seed.

MESPILUS—*Medlar Tree*—German, or Common Eatable Medlar—Smaller Nottingham Eatable Medlar—*Amelanchier*, or Shrubby—Arbutus-leaved Shrubby—Dwarf *Mespilus*—*Cotoneaster*, called Dwarf Quince—Canada Snowy *Mespilus*—Eastern, or Dwarf Cherry of Mount Ida—*Pyracantha*, or Evergreen Thorn. (Mostly deciduous tree and shrubs; one evergreen.) By seed and layers.

MORUS

MORUS—*Mulberry Tree*—Common Black-fruited White-fruited—Red-fruited—Italian—Paper-barked of Japan. (Deciduous trees.) By seed, layers, and cuttings.

MYRICA—*Candle-berry Myrtle*—Wax-bearing, or Common Candle-berry Myrtle—Dwarf Broad-leaved——*Gale*, Sweet-Willow, or Dutch Myrtle. (Deciduous shrubs.) By layers, cuttings, suckers, and seed.

NYSSA—*Tupelo Tree*—Water Tupelo of America ——Uniflorus, or One-flowered. (Deciduous.) By layers, cuttings, and suckers.

OLEA—*Olive Tree*—European Olive Tree. (Evergreen.) By layers.

ONONIS—*Rest-Harrow*—Shrubby Purple—Tridented-leaved Shrubby. (Low Undershrubby.) By seed and suckers.

PASSIFLORA—*Passion-Flower*—Blue-rayed Common Passion-Flower. (Climbing shrub.) By cuttings, layers, and seed.

PERIPLOCA—Climbing Shrubby Dog's-Bane, or Virginia Silk—Grecian *Periploca*, or Common Climbing Dog's-Bane of *Syria*—African Dwarf Climbing. (Climbing shrubs.) By layers and cuttings.

PHILADELPHUS—*Syringa*, or Mock-Orange—Coronarious-flowering, or Common Syringa—Inodorous of Carolina. (Deciduous shrubs.) By suckers, layers, and cuttings.

PHIL-

PHILLYREA—*Mock-Privet*, or *Phillyrea*—Broad-leaved—Middle, or Oval-leaved—Narrow-leaved—Rofemary-leaved—Silver-ſtriped leaved—Gold-ſtriped. (Evergreen ſhrubs.) By ſeed, and layers.

PHLOMIS—*Jeruſalem Sage*—Shrubby Broad-leaved Yellow——Narrow-leaved Yellow——Dwarf Yellow of Crete——Purple-flowered Portugal. (Evergreen hoary ſhrubs.) By layers and cuttings.

PINUS—*Pine Tree*; comprehending alſo Fir, Cedar of Lebanon, and Larch Tree. See each under its proper head as below, diſtinguiſhed by the order of their reſpective leaves, viz.

PINUS *Pinaſter*, (Pine kinds) having the leaves placed by two, three, or five from the ſame point—Wild Pine, or Pinaſter—Scotch Pine, commonly called Scotch Fir—Pinea, or Italian Stone Pine—*Strobus*, or New-England Pine Tree, called Weymouth Pine—Tæda, or the Torch Pine—Frankincenſe Pine—Marſh, or Swamp Pine—New-Jerſey Pine—Stiff-leaved Virginia—Aleppo Spreading-branched—*Cembra*, or Mountain Siberian Pine. (Evergreen trees.) By ſeed.

PINUS-ABIES, (Fir kinds) having all the leaves ſtanding ſingly—Common Norway Spruce Fir—Long-coned Norway Spruce or Corniſh Fir—Canada White Spruce—Red Spruce and Black Spruce Fir—Hemlock Spruce Fir—*Picea*, Pitch Tree, or Silver Fir—*Balſamea*, or Balm-of-Gilead Fir—Oriental Tetragonous-leaved. (Evergreen trees.) By ſeed.

PINUS CEDRUS and *Pinus Larix*, (Cedar and Larch kinds) having the leaves in bunches from the ſame point—*Cedrus*, or Cedar of Lebanon—*Larix*, Larch Tree, or Deciduous *Pinus*. (Tall evergreen trees, and one deciduous.) By ſeed.

PISTACIA—*Piſtachia Nut*, or Turpentine Tree—Common Piſtachia Tree—*Terebinthus*, or Turpentine Tree—Trifoliate Piſtachia Tree—Narbonne Turpentine Tree. (Deciduous trees and ſhrubs.) By ſeed and layers.

PLATANUS—*Plane Tree*—Eaſtern Plane—Weſtern, or American Plane—Spaniſh, or Middle Plane. (Large deciduous trees.) By ſeed, layers, and cuttings.

POPULUS—Poplar Tree—White Poplar, or Abele Tree—Black Poplar—Tremulus Poplar, or Aſpen Tree—Balſamiferous Carolina Poplar—Tacamahacca Balſamic Poplar—*Heterophyllous*, or Variable-leaved—Lombardy, or Italian Upright Swift-growing. (Large deciduous trees.) By cuttings, layers, and ſuckers.

POTENTILLA *fruticoſa*—Shrubby Cinquefoil. (Deciduous ſhrub.) By ſuckers, layers, and cuttings.

PRINOS—*Winter-Berry* and South-Sea Thea—Whorled Virginia Winter-Berry—Smooth Canada *Prinos* Yappon, or South-Sea Tea. (Firſt deciduous; ſecond evergreen ſhrub.) By ſeed and layers.

PRUNUS

PRUNUS—*Plum Tree*—Common Plum, of many varieties, *(See the fruit garden)*—Striped-leaved—Bloatched-leaved—Double-flowered—Damson Plum—Bullace Tree—Thorny Plum, Sloe-bush, or Black-thorn. (Deciduous.) By grafting, budding, stones, suckers and layers.

PRUNUS-CERASUS—*Cherry Tree*—*Cerasus*, or Common Cherry Tree, of numerous varieties as in the fruit garden—Double-blossomed—Red-blossomed—Great Wild Cherry Tree, the Black and the Red-fruited—*Padus*, or Bird Cherry—Cornish-cluster Bird Cherry—Canadian Bird Cherry—Virginian Large Bird Cherry—*Mahaleb*, or Perfumed Cherry. (Deciduous trees and shrubs.) By grafting, budding, and stones, and some by cuttings and layers.

PRUNUS-*Armeniaca*—*Apricot Tree*—*Armeniaca*, Common Apricot, of many varieties as in the fruit garden—Striped-leaved. (Deciduous.) By budding, to continue the desirable varieties.

PRUNUS *Lauro-cerasus*—*Cherry Bay*, or *Laurel Tree*—*Lauro-cerasus*, or Common Laurel—Silver-striped—Gold-striped—Portugal Laurel. (Fine evergreens.) By cuttings, layers, and seed.

PTELEA—*Shrub Trefoil*—Trifoliate-leaved of Carolina. (Deciduous.) By layers, cuttings, and seed.

PUNICA—*Pomegranate Tree*—*Granatum*, or Common Pomegranate—Double-flowered—Striped-flowered—Dwarf Pomegranate—Double-flowered Dwarf. (Deciduous trees and shrubs.) By layers.

PYRUS—*Pear Tree, Apple,* and *Quince*—Common Pear Tree, of numerous varieties as in the fruit garden—Variegated-leaved—Double-flowered—Twice-flowering. (Deciduous trees.) By grafting, ſeed, &c.

PYRUS-*Malus*—*Apple Tree*—*Malus*, or Common Apple, great varieties as in the fruit garden—Double-flowered—Crab, or Wild Apple—Paradiſe Dwarf Apple—Fig Apple—Sweet-ſcented Crab—Evergreen Sweet Crab—Siberian Baccaceous Crab. (Deciduous trees and ſhrubs, one evergreen.) By grafting, budding, ſeed, and layers.

PYRUS-*Cydonia*—*Quince Tree*—*Cydonia*, or Common Quince, ſeveral varieties. (Deciduous tree.) By cuttings, layers, ſuckers, and ſeed.

QUERCUS—*Oak Tree*—*Robur*, or Common Engliſh Oak—Striped-leaved—Cheſnut-leaved American—Willow-leaved American—White Virginian—Red Virginian—Black Virginian—Prickly-cupped Spaniſh—Cut-leaved Italian—Turky Lyre-ſhaped-leaved. (Large deciduous trees.) By the acorns.

QUERCUS-ILEX—*Evergreen Oak*—*Ilex*, or Common Evergreen Oak—Montpelier Holly-leaved—*Suber*, or Cork Tree—Scarlet Kermes Oak—Moluccan, or American Live Oak. (Large Evergreen trees.) By the acorns.

RHAMNUS—*Buckthorn*—Common Purging—Dwarf Purging—Long-leaved Dwarf—Lycioide Spaniſh—Olive-leaved Spaniſh—Linear-leaved, or Supple-Jack. (Deciduous ſhrubs.) By ſeed, layers, and cuttings.

RHAM-

RHAMNUS-FRANGULA—*Berry-bearing Alder*—Common Frangula—Dwarf Alpine Rough-leaved. (Deciduous ſhrubs.) By ſeed, layers, and cuttings.

RHAMNUS-PALIURUS—*Chriſt's Thorn.* (Deciduous ſhrub.) By ſeed, layers, and cuttings.

RHAMNUS-ALATERNUS—*Alaternus*—Common Green—Broad-leaved—Narrow-leaved—Jagged-leaved—Bloatched-leaved—Gold-ſtriped—Silver-ſtriped. (Evergreen ſhrubs.) By layers and ſeed.

RHODODENDRON—*Dwarf Roſe Bay*—Large American Laurel-leaved Evergreen——Pontic Dwarf Evergreen——Ferrugineous, or Iron-coloured——Hairy Alpine——Dwarf Ciſtus of Mount Baldis. (Evergreen and deciduous ſhrubs.) By ſeed, layers, &c.

RHODORA *Canadenſe*—Canada Roſe Bay. (Evergreen ſhrub.) By ſeed, layers, and ſuckers.

RHUS—*Sumach & Toxicodendron*——Coriaria, or Tanner's Sumach—Stag's Horn Sumach—Glabrous, or Smooth—Lentiſcus-leaved—*Cotinus*, or Venetian Sumach—*Toxicodendron*, or Poiſon Tree Radicant, or Rooting-branched—*Vernix*, or Varniſh Tree—Chineſe Lac Tree. (Deciduous trees and ſhrubs.) By ſeed, ſuckers, and layers.

RIBES—*Currant* and *Gooſeberry*—Common Red Currant—White Currant—Black Currant——*Groſſularia*, or Gooſeberry—Red-berried—Green—White—Yellow, &c. (Deciduous ſhrubs.) By ſuckers, cuttings, ſeeds, &c.

ROBINIA—*Falſe Acacia*—*Pſeudo-acacia*, or Common Falſe Acacia—Scarlet-flowering—*Caragana*, or Siberian *Robinia*—Shrubby Quaternate-leaved—Dwarf Shrubby Quaternate-ſeſſile-leaved. (Deciduous trees and ſhrub.) By ſeed, layers, ſuckers, and cuttings.

ROSA—*Roſe Tree*—Canine, or Wild Dog-Roſe, the Red and the White-flowered—Common White Roſe—Great White—Common Red Roſe, Semi-double and Double-flowered—Striped Red, or *Roſa Mundi*—Red Monthly—Bluſh Red Monthly—White Monthly—Striped Monthly—Red Damaſk—White Damaſk—Bluſh Damaſk—York and Lancaſter Variegated Red and White—Red Belgic—Bluſh Belgic—Red Velvet—Marbled Red—Double Virgin Pale-red—Red and Yellow Auſtrian—Yellow Auſtrian—Double Yellow—Hundred-leaved Red—Bluſh Red Hundred-leaved—Britiſh Hundred-leaved—Common Red Province Roſe—Cabbage Province—Dutch Cabbage Province—Childing Province—Great Royal Province—Bluſh Province—Moſs Province—New White Province—Frankfort Purple—Cinnamon Purple-red Roſe—Alpine Spineleſs Red Roſe—Maiden's-Bluſh Red—Muſk White-cluſter—Burgundy Red—Bluſh Burgundy—Crimſon Burgundy—Burnet-leaved Roſe—Moſt Spinous, or Dwarf Scotch Roſe, the White, Red, and Yellow-flowered—Apple-fruited Roſe—Pendulous Long-fruited Roſe—Indian, or Chineſe Roſe—Stebon, or Stepney Roſe—Penſylvanian Roſe—Eglanteria, or Sweet-Briar Roſe—the Double-flowered—Bluſh-red—Scarlet-flowered—and Evergreen Sweet-Briar—Evergreen White Muſk Roſe. (Deciduous ſhrubs, and ſome evergreen.) Moſtly by ſuckers, ſome by layers and budding, when no ſuckers.

ROSE-

ROSMARINUS—*Rosemary*—Common Green—Silver-striped——Gold-striped. (Evergreen shrubs.) By cuttings, slips, and layers.

RUBUS—*Raspberry* and *Bramble*—Common Red Raspberry—White—Twice-bearing—Odoriferous, or Sweet-flowering of Virginia—Hispid-stalked of Canada—Shrubby *Rubus*, or Common Bramble—Prickless Bramble—Double-flowered—White-fruited. (Deciduous.) By suckers, layers, cuttings, and seed.

RUSCUS—*Butcher's Broom*, or Knee Holly—Common Prickly of the Woods—*Hypophyllum*, or Broad-leaved—Racemose-flowered, called Alexandrian Laurel—Tongued, or Leaf upon Leaf—*Anurogynous* of Canary, called Broad-leaved Alexandrian Bay. (Low evergreen shrubs.) By suckers and seed.

RUTA—*Rue*—Common Broad-leaved—Narrow-leaved—Variegated-leaved—Aleppo Broadest and Narrow-leaved. (Low shrubs.) By cuttings, slips, and seed.

SALIX—*Willow*—Common White——Almond-leaved—Shining-leaved—Babylonian, or Weeping—Lapland Woolly-leaved—Sweet-Willow—Rosemary-leaved—Red Willow—Purple Willow Dwarf Yellow—Osier Yellow—Glaucous-leaved—Brown Willow—White Barked, &c. (Deciduous trees.) By cuttings.

SALSOLA *fruticosa*——*Shrubby Glasswort.* (Low shrub.) By suckers, layers, cuttings, &c.

SAMBUCUS—*Elder Tree*—Common Black-berried—White-berried—Variegated-leaved—Cut-leaved—Cluster-flowered—Red-berried——Canada Shrubby, with a five-parted umbel. (Tree kinds, one shrubby, and all deciduous.) By seed, cuttings, suckers, &c.

SALVIA—*Sage*—Common Sage—Broad-leaved—Variegated-leaved—Balsamic Tea Sage—Narrow-leaved Tea Sage. (Undershrubby evergreen plants.) By slips, cuttings, and suckers.

SANTOLINA—*Lavender-Cotton*—Common Shrubby—Rosemary-leaved Undershrubby——Minor Rosemary-leaved——Large-flowered Rosemary-leaved——Green Rosemary-leaved. (Dwarf shrubby evergreen plants.) By slips, cuttings, suckers, &c.

SMILAX—*Rough Bindweed*—Common Rough-leaved—Round-leaved—Bay-leaved—Black-briony-leaved——*Sarsaparilla*, having tri-nervous long-pointed leaves. (Climbing shrubby plants.) By layers, cuttings, seeds, &c.

SORBUS—*Sorb*, or *Service Tree*—Cultivated, or True Service Tree——The Bird's Service, or Mountain Ash. (Deciduous tree kinds, with winged leaves.) By seed, layers, &c.

SPARTIUM—*Broom*—Common Besom Broom—Rushy, or Spanish—Double-flowered Spanish—Radiated, or Starry Italian—Angulated Eastern—Complicated-leaved Spanish—White-flowered. (Deciduous shrub kinds, with slender green branches.) By seed, layers, and cuttings.

SPIRÆA—*Spiræa*—Willow-leaved Spiræa Frutex——Crenated-leaved, with white flowers——
——Downy-leaved Red-flowered——Hypericum-leaved, called Hypericum Frutex—Guelder--Rose-leaved of Virginia—Dwarf of Siberia—Sorbus-leaved. (Deciduous shrubs.) By suckers, layers, &c.

STAPHYLÆA——*Bladder Nut*——Pinnated, or Winged-leaved. (Deciduous shrubs.) By seed, suckers, layers, &c.

STEWARTIA-*Malacodendron*——Cherry-leaved Stewartia. (Deciduous shrub.) By seed, layers, &c.

STYRAX—*Storax Tree*—Common Officinal Storax—Large-leaved. (Deciduous trees.) By seed, layers, and cuttings.

SYRINGA—*Lilac Tree*—Common Purple-flowered White-flowered—Scotch Deep-purple—Persian Lilac—Laciniated, or Cut-leaved Persian. (Deciduous tree and shrub kinds.) By suckers and layers.

TAMARIX—*Tamarisk Tree*—French Tamarisk—German Tamarisk. (Deciduous trees.) By seed, layers, &c.

TAXUS—*Yew Tree*—Common Yew. (Evergreen tree.) By seed.

THEA—*Tea Tree*—Green Tea Tree—Bohea Tea Tree. (Deciduous shrubs.) By seed, suckers, and layers.

THUJA

THUJA—*Arbor-vitæ*, or *Tree of Life*—Common American—Oriental, or Chinese—Sweet American. (Evergreen trees.) By seed, layers, and cuttings.

THYMUS—*Thyme*—Common Thyme; comprising Small-leaved——Broad-leaved——*Serphyllum*, or Mother of Thyme—the Common Larger—Lesser Woolly-headed——Narrow-leaved Hairy——Lemon-scented——*Zygis*, or Upright, with linear ciliated leaves—Portugal, with large imbricated heads—Hairy-leaved Portugal. (Low undershrubby evergreens.) By seed, slips, suckers, and cuttings.

TILIA—*Lime Tree*—Common European——Red-twigged European——American. (Deciduous trees.) By seed, suckers, cuttings, and layers.

ULMUS—*Elm Tree*—Common English Doubly-sawed-leaved——Small-leaved Cornish——Dutch Broad-leaved—American Singly-sawed-leaved——Rough-leaved—Smooth-leaved—Dwarf Siberian—Striped-leaved Elm. (Deciduous trees, &c.) By suckers, layers, seed, grafting, &c.

VACCINUM—*Whortle-Berry*—*Myrtillus*, or Black-fruited——White-fruited——Red-fruited—Pointed-leaved—Privet-leaved—Long-Stamineous-flowered—Corymbose-flowered——Frondose-branched—Great Bilberry Bush——*Oxycoccos*, or Craneberry—Hispid-stalked. (Deciduous and evergreen shrubs.) By seed, suckers, off-sets, layers, and cuttings.

VIBURNUM—*Wayfaring*, or *Pliant Mealy Tree*—*Lantana*, or Common Downy-leaved—Broad-leaved—Striped-leaved—Maple-leaved—Dentated-leaved—Plum-Tree-leaved Virginian. (Deciduous trees and ſhrubs.) By ſeed, layers, ſuckers, &c.

VIBURNUN-*Opulus*—*Guelder-roſe*—Common Double-flowered——*Lentago*, or Canada Guelder-roſe. (Deciduous ſhrubs.) By ſuckers, layers, cuttings, &c.

VIBURNUM-*Tinus*——*Lauruſtinus*——Common Smooth-leaved—Hairy-leaved—Shining-leaved—Variegated-leaved—Naked Umbelled American. (Moſtly evergreen ſhrub kinds.) By layers, ſuckers, &c.

VINCA—*Periwinkle*—Minor, or Leſſer Trailing Blue—Major Upright Blue—Gold-ſtriped-leaved—Silver-ſtriped-leaved. (Evergreen ſhrubby plants.) By layers, off-ſets, cuttings, &c.

VITEX—*Agnus-Caſtus*, or *Chaſte Tree*—Common Digitated-leaved—Broad Digitated-leaved. (Deciduous trees.) By layers, cuttings, ſuckers, &c.

VITIS—*Vine*, or *Grape Vine*—Common, or Cultivated Vine, many varieties—Fox Grape—Tree Vine—Laciniated, or Parſley-leaved—*Labruſca*, or Ivy-leaved Wild American Vine. (Deciduous climbers.) By layers and cuttings.

YUCCA—*Adam's Needle*—Aloe-leaved—Filamentoſe, or Thready-leaved. (Evergreen ſucculent ſhrubby plants.) By off-ſets, ſuckers, &c.

ZAN-

ZANTHOXYLUM——*Tooth-ach Tree*——*Clava-herculis*, or Common Ash-leaved. (Deciduous.) By seed, layers, cuttings, &c.

THUS far comprises the collection of hardy trees and shrubs, both of the deciduous and evergreen kinds, proper for furnishing all ornamental plantations, in pleasure grounds, &c. and which are cultivated for sale in all the public nursery gardens, for the general supply of gardens, &c. in forming shrubberies, wilderness works, shady walks, groves, woods, avenues, clumps, thickets, hedges, &c. and all of which are hardy enough to succeed in any common soil and situation; the greater part being very hardy, and only a few require occasional shelter, especially while young, such as the *Magnolia*, which require a warm situation, and an awning of mats in severe frosts: the *Arbutus* and some of the *Cistus*, are also tender in their infant state, standing in need of the occasional shelter of a frame the first two or three Winters; afterwards will bear the full air all the year

In extensive pleasure grounds, there is room to admit a full collection of the above list of trees and shrubs, which may be so disposed in various plantation compartments, so as to effect a most striking diversity and entertaining variety the year round, appearing highly ornamental, and, in many cases, also very useful in affording shade and shelter in the most agreeable manner.

Also in small grounds, it is easy to introduce a chosen collection of the principal sorts, according to the extent of the premises; for no pleasure ground can be complete unless diversified with a larger or smaller collection of ornamental trees and shrubs, judiciously arranged.

Likewise, as many of the trees of the foregoing arrangement are eminent forest or timber trees, are proper

proper alſo to introduce in diverſifying extenſive pleaſure grounds, both in home and all out-plantations, and in the latter particularly, they ſerve the double purpoſe both of ornamenting the premiſes, affording variety and ſhelter to the particular departments; and being at firſt planted tolerably cloſe, *(See the head foreſt trees)* they after a few years growth will afford the opportunity of thinning them by degrees, for various oeconomical purpoſes, both for huſbandry implements, and in building, &c. leaving at laſt a ſufficient ſupply of the handſomeſt growths, at moderate diſtances, to grow to full-ſized ſtandards for timber. But having alſo collected all the proper foreſt and timber trees, employed in forming woods, coppices, and all foreſt plantations for profit, under a ſeparate head or claſs, we refer to that article for a particular account of theſe kinds, together with their general culture.——See *ſecond claſs.*

Alſo in this firſt claſs of hardy trees and ſhrubs, are many ſorts proper for forming the various kinds of hedges, both for fences, ſhelter, and ornament, as well as for arbors, and various kinds of formal trained figures, as in ancient gardening, ſuch as pyramids, pedeſtals, globes, hemiſpheres, arches, porticos, galleries, &c. though theſe trained devices are almoſt aboliſhed in Engliſh gardening, to give place to more rural deſigns of a natural imitation, and are now ſeldom admitted; however, in large pleaſure grounds, ſome ornamental works of this kind might be introduced for variety in particular diſtricts, both in cloſe hedge-work, arches, &c. and detached figures, judiciouſly diſpoſed; but as to hedges for fences, ſhelter, blinds, &c. they may be neceſſary on various occaſions in pleaſure gardens; and for the ſeveral ſorts of trees and ſhrubs proper to employ for hedge-work of all ſorts, and any kind of trained figures, ſee the article *hardy trees for hedges, &c.*

As

As all the trees and ſhrubs in the foregoing arrangement, may, for the various purpoſes, be either obtained in the public nurſeries at moderate prices, or be eaſily raiſed by every one having proper ſcope of ground, by the general directions here given of the different methods by which they are commonly propagated, conſiſting of the following:

By ſeed, ſuckers, layers, cuttings, ſlips, rooting-branches, off-ſets, roots, grafting, budding, inarching.

By one or other of theſe methods all the ſorts of trees and ſhrubs are raiſed, ſome ſucceeding by one particular mode of propagation, and others may be raiſed by either, or ſeveral of the methods, as hinted under each genus in the liſt of the different ſorts; each mode of propagation being exhibited under its reſpective head, explaining the different ways of performing each method, together with the particular merit of each, in propagating the different ſorts of trees and ſhrubs.

FIRST, BY SEED.

By ſeed a great number of hardy trees and ſhrubs are commonly raiſed, as may be obſerved by the hints given in the foregoing arrangement, and moſtly in beds of common earth in the open ground; and ſome few ſorts are forwarded in a hot-bed, ſuch as the *Arbutus*, or Strawberry Tree, &c.

Under the denomination of ſeed, by which theſe trees and plants are raiſed, is comprehended not only all the ſorts of ſmall ſeeds and kernels, but alſo the berries, acorns, nuts, and ſtones of the fruits, &c. according to the different ſorts; for the ſeeds of trees and ſhrubs are produced in various ways,

as

as in capſules, pods, cones, berries, nuts, acorns, maſt, keys, &c. and in various drupaceous fleſhy fruits, as apples, pears, plums, cherries, &c. containing kernels and ſtones; obſerving, that all thoſe ſeeds contained in the capſules, pods, cones, large berries, &c. ſhould generally be taken out of their reſpective veſſels for ſowing; though ſome contained in ſmall berries, as haws, hollies, &c. may be occaſionally ſowed, the berries and ſeeds together, previouſly bruiſing the berries: likewiſe moſt ſorts of the nut and acorn kinds ſhould be ſowed with the nuts, &c. entire, as alſo the maſt and keys; but all ſeeds contained in cloſe drupaceous fruits, as the apple, pear, plum, cherry, quince, medlar, &c. aforeſaid, muſt be taken out of their reſpective fruits previous to ſowing.

The ſeeds ripen moſtly in Autumn, about September and October, and ſome in Winter and towards Spring, ſuch as ſeveral of the cone kinds of the pine and fir trees; others in Summer, as elms, &c. and the ſeeds of all the ſorts may be had at the nurſeries and ſeed-ſhops in the proper ſeaſon, from about Michaelmas till March, &c. and the principal ſeaſon for ſowing moſt of the ſorts is, either ſoon after they are ripe, or in the Spring, about February or March; though the Spring ſeaſon is more eligible for ſowing ſeveral of the evergreen kinds particularly, and many of the more delicate of the deciduous tribe; but as ſome kinds of tree and ſhrub ſeeds, of the ſtone kind, remain in the ground two years before they come up, ſuch as haws, hollies, and ſome others, with very hard bony ſeeds, they are previouſly prepared for vegetation a year before they are committed to the ground in the order of ſowing, by either burying them as ſoon as gathered, in a heap, in a grave or trench, or in large pots, plunged into the ground, covering the top in either method, with dry ſtraw, then earthed over ſix or

eight inches ridge-ways; and after remaining in this ſituation till next Autumn, are taken up and ſowed, when they will come up the Spring following: though if thought convenient, theſe ſorts of ſeeds may alſo be ſowed as ſoon as ripe, at once in beds in common with other hardy tree ſeeds; but as they will ſeldom riſe before the ſecond Spring, the beds muſt be all the while kept clean from weeds; which muſt always be particularly well attended to in all other tree and ſhrub ſeed-beds, where the plants happen not to riſe freely the firſt year.

The general ſeaſon for ſowing being, as before obſerved, Autumn and Spring, moſt of the hardy deciduous kinds, ſucceed by the Autumn ſowing, in September, October, and November, ſoon after the ſeeds are ripe, or if cold moiſt ſoils, kept till February; obſerving of the nut kinds, kernels, &c. when kept till Spring for ſowing, it may be proper to lay them in dry ſand to preſerve the vegetative quality more effectually: but ſome ſorts, as acorns, are apt to ſprout if kept long, ſo may be proper to ſow them in Autumn or early part of Winter, in a dry ſituation, and moſt of the evergreens in the Spring.

Generally chuſe a ſpace of moderately light dry ground for the ſeed-beds, let it be well digged, one or two ſpades deep, breaking all large clods, and lay the ſurface even.

Then, as to the methods of ſowing, that for the ſmall ſeeds, kernels, ſtones, berries, &c. they are commonly bedded in; and the larger nut kinds are often ſowed or planted in drills; though almoſt all ſorts may either be bedded or drilled in as convenient, as below; and ſome are ſowed in pots, hot-beds, &c.

By ſowing in beds, mark them out three feet and half or four feet wide, with foot-wide alleys between, then, either with a ſpade or rake, trim the earth from off

off the ſurface of the bed into the alley, from about an inch to two or three inches deep, according to the ſize of the different ſeeds, the larger the ſeed the deeper it ſhould generally be covered; then, having thus prepared the beds, ſow the ſeeds regularly all over the ſurface, thicker or thinner, according to what they are, and with the back of the ſpade preſs them all evenly into the earth, even with the ſurface thereof; and then with the rake or ſpade, ſpread the earth on the bed evenly over the ſeed, covering them all an equal depth, and lightly rake the ſurface ſmooth, clearing off all large ſtones and rough clods.

By drilling in, let drills be drawn with an hoe, from one to two or three inches deep, in proportion to the ſize of the ſeeds, nuts, ſtones, berries, or kernels, &c. and from ſix to ten or twelve inches diſtance; ſow or place the ſeeds, &c. along the bottom of each drill, and directly with a rake or hoe, cover them in with the earth all an equal depth, and trim the ſurface ſmooth by a light raking.

But when deſigned to ſow any choicer tree or ſhrub ſeeds in pots, either for moving to different ſituations occaſionally, as to the ſhade in Summer, and to the full ſun in Winter, &c. or for placing in a hot-bed to forward the germination of the ſeeds, let ſome largiſh pots be filled with light rich earth, ſow the ſeeds, or plant them, as their ſize require, the depth as above adviſed, in ſowing in beds and drills; and place them in ſituations as above-mentioned; obſerving, thoſe deſigned for forwarding in hot-beds, ſhould be placed therein, in March, and when the plants come up, admit plenty of free air to them, by raiſing the glaſſes, and taking them quite off occaſionally; and gradually harden the plants to the full air early in their growth, by expoſing them fully thereto by degrees, as the warm ſeaſon advances;

In moſt ſorts the ſeeds will germinate and come up the firſt Spring, and ſome will not grow till the ſecond year, ſo muſt not be diſturbed, obſerving as below.

Reſpecting the care of the ſeed-beds of trees and ſhrubs, keep them clean from weeds and moſs both before and after the plants appear; and if the ſurface of ſuch beds as were ſowed in Autumn, ſhould in the Spring appear cruſted, or hard bound, or moſſy, let the top be lightly looſened with a ſhort-teethed rake, and ſcatter a little looſe earth thereon: and if the months of April, May, &c. prove very dry, ſome moderate waterings will be of advantage; being careful to clear out weeds all Summer; and in thoſe beds in which the plants do not appear, or do not all come up the ſame year, but that the ſeeds moſtly remain dormant till the ſecond Spring, as before ſuggeſted, let good care be taken to keep them very clear from weeds all the firſt Summer, &c. for, as we formerly obſerved, there being many of the hard, ſtony-ſeeded kinds, which come up but very ſparingly the firſt year, and ſome ſcarcely at all till the ſecond Spring after ſowing, except ſuch as have been previouſly buried in a heap in the ground for a year; ſo that the beds muſt not be diſturbed, but occaſionally weeded and watered in Summer, and they will come up freely in the April and May following.

Some of the more delicate and tender ſeedlings of the choicer kinds will require ſome moderate ſhade from the mid-day ſun at firſt coming up, till they acquire ſome ſtrength.

Likewiſe, in Winter it will be proper to afford ſome of the choicer and tenderer evergreen ſeedlings ſome protection from hard froſt, by an occaſional covering of mats, ſupported upon hoop arches, and thoſe in pots may be moved under a garden frame and glaſſes, &c. but obſerving they are only

to

to be defended or covered in hard frosts and very cutting weather.

When the seedling trees and shrubs are from one to two or three years old, they are to be planted out in nursery rows; large seedlings may be thinned and planted out when one year old, but let those of smaller size have two years growth in the seed-bed.

The season for planting them is, that for the larger hardiest kinds of the deciduous tribe, may begin planting in Autumn, at the fall of the leaf, or may defer the whole till towards Spring, in February and beginning of March, but let most of the evergreen kinds particularly, remain for Spring planting.

In preparing for planting them out, let the ground for their reception be well digged one or two spades deep; and in taking up the seedling plants out of the seed-bed, raise them with as good roots as possible, and if any have a very long perpendicular tap-root, let it be shortened to promote lateral, or horizontal spreading roots and fibres, and prune off any very strong or irregular lateral shoots on the sides of the stem, but preserve the top generally entire; then proceed to plant them in rows, the large tree seedlings may be planted at once in wide rows two feet and a half asunder, or the smaller seedlings may either be planted in four-feet wide beds, in rows from six to ten or twelve inches asunder, or in continued rows at that distance; and when increased two or three years in growth, are to be transplanted in wide rows two or three feet asunder, as just above observed.

And as to the method of planting the seedlings, the larger rooted kinds may be planted by cutting out a small trench along the side of the line with a spade, making the line side perpendicular, six or eight inches deep, turning the earth from the line,

 then

then place the plants with the roots in the trench against the upright side, close to the line, at twelve, or fifteen, or eighteen inches distance, turning the earth in upon the roots as you proceed, and having planted to the end of the row, trim in the earth evenly, filling up the trench closely about the roots, and then tread it even, fixing all the plants uprightly, and so proceed row and row till finished: or in smaller plants, that instead of making a trench, may only make a slit with the spade for the reception of each plant, making the slit with the back of the spade close to the line, and if another is made crossways from the middle of the first, it will give larger scope for the admission of the root, inserting the plant close up to the line, and tread the earth about the roots, and so proceed to the end; but very small seedlings may be planted with a single slit, or by dibble, in lines six inches asunder, closing the earth well about each plant.

But some seedlings of the more tender and curious kinds should also be planted in pots to move under shelter of a garden frame, &c. the first two or three Winters, such particularly as the *Arbutus*, *Cistus*, *Cedars*, *Magnolias*, &c. planting one in each pot, and in November placed where they may be occasionally defended in hard frosty weather, &c.

After planting, if the Spring months of March, April, and May, prove very dry, some moderate waterings will be of great service, though where there is large quantities, this is often omitted; however, to the more curious and choice kinds, it is a very necessary article of culture.

Let the whole be kept clean from weeds by frequently broad-hoeing between the rows in Summer, and in Winter to those standing in wide nursery rows, let the ground be neatly digged between the lines of trees, &c.

Keep

Keep the ſtems of the tree kinds particularly, as they advance in growth, cleared from ſtrong, rambling, lateral ſhoots, ſo as to have a clear ſtem of ſix or ſeven feet or more, ſtill preſerving the tops entire, to aſpire in height; or if any have very crooked or dead tops, prune them down to the firſt upright-growing ſhoot, which retain entire for the top leader; but the ſhrub kinds ſhould alſo be kept to ſome regular order, by clearing away ſuckers at bottom, keeping the plant to one main ſtem, of from ſix inches to one, two, or three feet, according to their growth, and reduce to order any irregular rambling ſhoots of the head.

Thus, when the various trees and ſhrubs are advanced in ſize according to their nature of growth, whether tall or moderate growing trees, or large, middling, or dwarf ſhrubs, let them be planted out finally into the pleaſure ground plantations; obſerving of the tree kinds, that when they are four or five, to ſix, eight, or ten feet height, are of proper ſize for final tranſplantation, the large ſhrub kinds, when from two or three to five or ſix feet or more, may alſo be planted where intended, and the dwarf and underſhrubby ſorts, when of ſix or eight inches, to one, two, or three feet, are alſo proper for tranſplanting into the ſhrubbery, &c.

See the *order of planting* after the ſeveral articles of propagation.

By Suckers.

By ſuckers ariſing from the root, great numbers of the tree and ſhrub kinds are eaſily and expeditiouſly propagated; but more abundantly the ſhrubby tribe, as Lilacs, Roſes, Spiræas, Syringas, and numerous

merous other ſorts; as may be obſerved by the hints of their propagation in the catalogue arrangement; but many valuable tree kinds are alſo plenteouſly raiſed from ſuckers.

Suckers being a progeny or ſpawny off-ſpring iſſuing immediately from the roots of certain trees and ſhrubs, forming at once perfect rooted plants, as they may be readily detached from the parent; each furniſhed with roots and fibres, which renders this the moſt expeditious of all the methods of propagation; the ſuckers being produced in Spring and Summer, obtaining in one ſeaſon, from five or ſix inches to two or three feet ſize, according to the nature of growth of the various plants, and when they are of one or two Summers ſhoot, are of proper growth to be ſeparated from the parent tree or ſhrub, in the Autumn, Winter, or Spring following.

As therefore many valuable trees and ſhrubs afford the opportunity of propagation by ſuckers from the root, it demands particular attention, either in default of ſeed, &c. or where an expeditious increaſe is wanted, as being an advantageous and profitable method of raiſing the ſupply required, of ſuch trees, &c. as furniſh ſuckers, which ſome ſorts afford in great abundance annually, ſending up many diſtinct root-ſuckers, immediately furniſhed with roots, ſo as each forms at once a proper rooted plant, proving ſimilar in all reſpects to the mother tree or ſhrub; which renders it alſo a certain method of propagation to continue any particular variety always the ſame, eſpecially of ſuch trees, &c. as grow upon their own root, not having been grafted upon any different ſtock, and in which caſe, any particular ſort is increaſed and continued with all the peculiar properties, the ſame as by cuttings, layers, grafting, &c. without varying to different kinds, as in the caſe of many ſeedling varieties.

Suckers

Suckers are generally of expeditious growth in their firſt eruption from the root of the parent plant, obtaining from five or ſix inches to two or three feet length or more in one Summer; and it is commonly the moſt adviſeable to detach them while young, not more than of one or two years old, but principally when but of one year's growth is the moſt eligible, before the roots become thick and hard.

As to the ſeaſon for taking up and planting out the ſuckers, it may be performed any time from the fall of the leaf in October, November, &c. till March, in all open weather.

Let them be digged up with all the roots and fibres poſſible, prune off any long, naked, ſticky, or broken part of the root, all lateral or ſide-ſhoots from the ſtem, and if the top is weak and bending, let it alſo be pruned a little as ſhall ſeem neceſſary; but thoſe with robuſt firm tops, may be left entire; then plant them in nurſery rows, as directed for the ſeedling plants; or ſome large ſuckers may be planted at once where they are to remain in the ſhrubbery, &c.

The farther care in the nurſery, is nearly the ſame as directed for the ſeedling trees, &c. keep them clean from weeds all Summer by hoeing the ground between the rows; and in Winter or Spring, dig it one ſpade deep, eſpecially to ſuch as ſtand in wide rows, to admit of digging between them; and let the plants be trained each to a ſingle ſtem, in length proportionally to their nature of growth, whether as trees, ſhrubs, or underſhrubs, &c. by the rules obſerved in the ſeedling plants; and let them branch out freely above, and form full heads.

And after having obtained a proper growth, peculiar to their nature both as trees and ſhrubs, for the purpoſes intended in the ſhrubbery or any ornamental

mental plantation, let them accordingly be finally transplanted where they are designed to remain, in the order formerly hinted, and as is more fully directed under the head, *General rules of planting*.

By Layers.

By layers of the young shoots and branches fastened down in the earth, while they remain on the trees, &c. almost any of the tree and shrub kinds may be propagated, and is the principal method by which great numbers are commonly raised, especially in defect of seed, suckers, &c. or when designed to propagate more expeditiously than by seed, or to continue any particular varieties of the same properties or peculiarity as the parent, for as the layers being parts similar to the whole plant, they become new vegetables the same in all respects as the mother tree or shrub, both in their nature of growth, leaves, flowers, fruits, &c.

The propagation by layers, being effected with the young shoots or branches of the tree and shrub intended, is performed while the said shoots, &c. remain growing upon the trees or shrubs, by bending them down to the earth and layed therein, the body of them from three or four to five or six inches deep, with the top out, there to remain generally one year, to emit roots in the earth, or some very hard-wooded kinds. require two years before they are sufficiently rooted, and when, in either case, they are furnished with roots, are then to be separated from the main plant, and set out in nursery rows, for training as required.

It is principally the young shoots of a year old, that are to be chosen for layers, and those which are

are ſituated near the ground; the ſhrub kinds generally branching out low, afford a better opportunity for furniſhing layers than trees with tall ſtems, and the branches elevated, which either require the ſtem while young, to be cut down near the bottom, to force out lower ſhoots, conveniently ſituated for laying into the earth; or have pots of earth placed upon a ſtand or raiſed platform, near enough the lower branches of the head for laying them.

But where any conſiderable propagation of the tree kinds are intended, eſpecially of thoſe which run up naturally with tall naked ſtems, without furniſhing branches near the ground, it is eligible always to have ſome previouſly headed down for ſtools while young, or when the ſtem is not more than two or three inches thick, cutting them off near the bottom in Autumn or Spring; and in Summer following they will ſend out many bottom ſhoots near the earth, proper for laying the Autumn following, or in the ſecond Antumn at fartheſt: and when the layers are rooted and planted off, the ſame mother-ſtools remaining, furniſh a ſupply of layers every year as above.

Concerning the methods of performing the operation of laying trees and ſhrubs for propagation, it is effected different ways with regard to the previous preparation of the layers of ſome particular kinds before the laying them in the earth, to promote their emitting roots more freely, for although many kinds of trees and ſhrubs ſucceed by juſt laying the branches into the earth, without either ſlitting, twiſting, wiring, &c. yet many ſorts of the harder-wooded kinds particularly, will not root freely unleſs the layer is gaſhed or ſlit on the under ſide, which, indeed is a ſucceſsful method in laying all ſorts; and ſome will alſo ſucceed by giving the layer a gentle twiſt in the part to be layed in the earth, and others which emit roots ſlow and ſparingly, require the layer either to be chipped,

ped, or wired tightly round the layed part, or have that part pierced with an awl.

So that the operation of laying may be occasionally performed by these following methods, viz. Common-laying——Slit-laying——Twist-laying——Chipping the layer—Wiring the layer—Piercing the layer.

Common-laying, is by inserting the shoot or layer in the earth, without any preparation of slitting, twisting, or wiring, &c. and often succeeds sufficiently well in the soft-wooded kinds, many of which will emit roots freely if the shoots are but just layed a proper depth into the earth.

Slit-laying, is by cutting a gash or slit upward on the under side of the layer, in that part which is to be layed in the earth, making the cut nearly about half way through the wood, slanting an inch or two upward along the middle of the shoot, and then inserting the layer, bring the top upright, so as to keep the slit or gash underneath open; and in that manner cover it in with the earth the proper depth: this method proving of utility in promoting the speedy and more effectual emission of roots, is a very eligible method for general laying, both of the soft and hard-wooded trees, &c. except in such very hard woods as require wiring, or pricking with an awl, as aforesaid.

Twist-laying, is by giving the intended layer a gentle twist instead of slitting, in the part which is to be layed in the earth, in order to forward the rooting, though is not so effectual as slitting, except for any of the soft-wooded tribe.

Chipping the layer, is by chipping or cutting out small chips of the bark and wood of any large layer particularly, about a joint at the part to be layed in the earth, of such hard-wooded kinds as do not emit roots easily by any of the former methods, and it will promote the issuing of fibres in that part more expeditious and abundant.

By

By wire-binding the layer, is practiſed occaſionally to ſuch of the hardeſt-wooded kinds, which do not emit roots freely by any of the former methods; and is performed by twiſting ſome ſmall pliant tough wire tight round about a joint of the layer in the part which is to be layed in the earth, that by confining the ſap, it promotes the emiſſion of roots in that part, and often ſucceeds in laying ſome difficul-trooting ſorts, when all other methods fail.

Piercing or boring the layer, is ſometimes practiſed inſtead of wiring, to produce the ſame effect; and is by pricking with an awl the ſhoot at a joint, piercing it through the bark and wood in ſeveral parts round the joint in the part to be layed.

But of the above different methods, the ſlit-laying is the moſt eligible for general practice, where any preparation of the layer is neceſſary: for, as before noticed, there are many ſorts which will root free enough by inſerting the layers in the earth, without any preparation of ſlitting, twiſting, chipping, &c.

As to the general method of performing the operation of laying the ſhoots or layers into the earth in all the above modes of laying is, the ground about each tree and ſhrub, intended for laying, is to be digged, and the lower ſhoots and branches for layers, muſt be bent down, and, excavating the earth for their reception, lay them therein, about from three or four to five or ſix inches deep, and being provided with ſome long hooked ſticks or pegs, faſten them down firmly by thruſting the pegs into the ground, eſpecially to thoſe ſhtoos and branches which are ſtubborn, or that have a ſtrong ſpring: and alſo, as in many ſorts, the large main branches furniſhed with a proper ſupply of ſhoots for laying, are obliged to be brought down to the earth, they muſt be ſecured firmly therein with ſtrong hooked ſticks, as above; and then all the young

ſhoots on each ſuch branch, are to be regularly layed; obſerving in general, let the body of the layer be introduced bendingly into the earth, by opening a cavity of proper depth, pegging down ſuch as require it, raiſing the top of each layer upright out of the ground, and ſo as thoſe which are ſlit-layed, have the ſlit or gaſh at bottom, continued open; directly covering in the body of the layers with the earth, from three or four to five or ſix inches deep as aforeſaid, and with the top of each from two or three to five or ſix inches out of the earth, as they admit; and thoſe having weak or crooked tops, may be pruned to one, two, or three eyes above ground, or as you ſhall ſee neceſſary; being careful to leave the ſurface of the earth level and ſmooth between all the layers.

After performing the laying, the principal care is to keep the ground between the layers very clean from weeds; and in very dry weather, in the advanced part of the Spring and in the early Summer months, ſome moderate waterings will prove very ſerviceable in forwarding the rooting of the layers.

In the Autumn after laying, about October and November, the layers in moſt ſorts will be rooted, fit to be ſeparated and planted out in nurſery-rows, though, as there are ſeveral ſorts which require two years before they are properly rooted, ſhould examine the layers in general in the Autumn or Spring after they are layed, and let all thoſe which are found ſufficiently rooted, be planted off; and let ſuch ſorts as are deficient of proper roots remain another year: obſerving, in taking up the layers when rooted, from the mother tree or ſhrub, cut them off clean beyond the rooted part, trim off any naked or broken parts at bottom, and ſtraggling lateral ſhoots from the top, then plant them in the nurſery, in rows, from ſix inches to one, two, or three

three feet aſunder, according to the nature and ſize of the layers; managing them as directed for the ſeedling and ſucker plants till of due ſize for final tranſplantation, where intended.

By Cuttings.

The propagation by cuttings is, by cutting off a quantity of the young ſhoots of the year, or of a year old, from the tree or ſhrub you wiſh to propagate, and planting them in a ſhady border, &c. they, in the greater part, emit roots at bottom and ſhoots at top, in one year; and each form a diſtinct plant, the ſame in all reſpects as the parent tree, &c.

So that cuttings is a very plentiful and quick method of propagation, as a large quantity of young ſhoots may be expeditiouſly cut off and planted, and very many trees and ſhrubs are propagated by this method.

In moſt ſorts, the young ſhoots of the Summer's growth are the proper parts for cuttings, and the ſeaſon for planting is Autumn, at the fall of the leaf, about October, November, December, &c. or in Spring; chuſing principally the young ſhoots produced the laſt Summer before, of the ſtrongeſt robuſt growth: though in ſome particular hard-wooded evergreen kinds, the young ſhoots of the ſame year are alſo employed for cuttings, planted in June or July of the ſame Summer they are produced, particularly ſome evergreen ſhrubby kinds, as ſome of which emit roots more freely in the young than older cuttings; however, almoſt all the ſorts of trees and ſhrubs which grow by cuttings, will generally ſucceed by thoſe of the year-old ſhoots, which muſt always be conſidered as the principal parts for the general propagation by cuttings.

But in ſeveral ſorts of ſoft-wooded trees, &c. large cuttings of ſhoots and branches of ſeveral years growth, will alſo ſucceed, cut off in large truncheons, ſtakes, or poles, of from two or three, to five, ſix, or eight feet long, by from one or two to three inches thick, as in willow, alder, elder, and other aquatic trees, which is practiſed when required to raiſe a ſupply of plants to a large ſize as ſoon as poſſible, and they will root freely in any moiſt ſoil particularly, or by the ſides of rivers, brooks, or any watery or marſhy ſituation.——See *foreſt trees, hedge plants, &c.*

The ſeaſon for planting cuttings is principally in Autumn, about October and November, or in the Spring, about February and April; or the hardy kinds of the deciduous tribe, in particular, will ſucceed planted any time in open weather, from October or November till March, &c. and for planting cuttings of the young ſhoots of the ſame year in Summer, of ſome particular ſorts, eſpecially of the evergreen tribe, May, June, and July is the proper time, and they will root the ſame year by September or October following; but thoſe in the general method by cuttings of the yearling ſhoots, large truncheons, &c. planted in Autumn, Winter, or Spring, will not be rooted till the Autumn after, and ſome ſorts will be two years before they are ſufficiently rooted, which muſt be obſerved upon examining the progreſs the cuttings have made in rooting in the Autumn after planting, as aforeſaid.

In taking off the cuttings of the young ſhoots from the different trees and ſhrubs for planting, chuſe always the moderately ſtrong outſide and top-ſhoots of the ſtraighteſt firm growth, and cut them off in lengths of from five or ſix to twelve, fifteen or eighteen inches long, according to their nature of growth, and, where convenient, may take an inch or two of the former year's wood at the bottom of each cutting; though

though moſt cuttings will alſo ſucceed without this; and in ſome kinds of trees and ſhrubs which make very long ſhoots, as in the vine, paſſion-flower, honeyſuckle, &c. the ſaid ſhoots often admit of being divided into two, three, or more cuttings, of three or more joints in length, as in the vine and other ſorts whoſe ſhoots grow in joints.

Then, having procured a quantity of cuttings, prepare for planting them according to the directions below; obſerving, of the evergreen kinds which are furniſhed with leaves, to ſtrip of thoſe from the lower part of each cutting; and then for the cuttings in general, dig a ſhady border, or any ſpace of rich, moiſt, but pliable mellow ground, for planting them; the hardy free-rooting kinds will ſucceed any where; but the choicer ſorts, ſhould have a ſomewhat ſhady place, or in beds where they can have occaſional ſhade from the hot ſun in dry weather in the early part of Summer, otherwiſe will require conſiderable watering in that ſeaſon: plant them by dibble, in rows, from ſix inches to a foot aſunder, inſerting each cutting half way, or ſome two parts of three into the ground, cloſing the earth well about them.

Their culture after planting, is to keep them clean from weeds, and in the advanced Spring ſeaſon and early part of Summer, ſome good waterings in dry warm weather will be of much advantage in promoting and forwarding their rooting and making ſhoots at top; and in a year or two, or when they have increaſed much in growth, tranſplant them in Autumn or Spring, in wider rows, as adviſed for the ſeedling trees and ſhrubs, managing them in the ſame manner till of proper ſize for the plantations required.

When deſigned to plant large cuttings in truncheons, ſtakes, or poles, &c. of any of the aquatic trees, ſuch as willow, ſallow, alder, &c. to raiſe a

ſupply of large plants as ſoon as poſſible, as formerly ſuggeſted, for any particular purpoſe, either as ſtandard trees, or for hedges, &c. may take cuttings of the large ſtraight ſhoots, ſtems, or branches, of from one to two or three inches thick, and in truncheons of two or three feet length, or in ſtakes or poles of two or three yards, to plant in any moiſt, watery, or boggy ſituation, or along the ſides of watery ditches, brooks, rivers, or any piece of water, where required, they will readily emit roots, and grow; for it is peculiar to the aquatic tribe to root freely both in ſmall an ' large cuttings, as above; and which large truncheons or poles, &c. may be planted at once where they are to remain, either to form ſtandards, or to arrange for hedges, as aforeſaid: that if for ſtandards, may plant poles of two or three yards; or if for hedges, may either plant robuſt truncheons, of two or three feet, or in ſtakes of a yard and half or two yards, ſo as at once to form a fencible hedge of a yard or more high, eſpecially if the cuttings are planted chequer-ways acroſs one another.

Obſerve in planting all kinds of theſe large cuttings of aquatics in truncheons or ſtakes, they ſhould generally be ſharpened at the lower end, and where the ſoil is ſoft or marſhy, they may be readily thruſt or driven into the ground, but where it is any ways hard or ſtubborn, it is proper firſt to make holes, either with an iron crow, or large thick ſtake driven into the earth, ſufficient to introduce the cutting from a foot or half a yard to two feet or more, according to its length; or for large long poles, may dig apertures with a ſpade half a yard or two or three feet deep, as required, or as the ground will admit; and by either of theſe methods, inſert the cuttings in the ground, the depth, as above, cloſe the earth well about them, treading it gently round each where required, to ſteady them in the proper poſition.

By

By Slips.

The propagation by ſlips, is by ſlipping off the ſmall young ſide-ſhoots with the hand for planting, inſtead of cutting them from the plant with a knife, and is more particularly applicable to the under-ſhrubby and ſome of the ſmall ſhrubby tribe, ſuch as Sage, Southernwood, Lavender, and other ſlender-ſhooting ſhrubs; and conſiſts of ſlipping off the ſmall young ſide-ſhoots, cloſe to the mother branch, either the young ſhoots of the ſame year in Summer, about May, June, or July, as in propagating Sage and various other ſmall, moderate-ſhooting, evergreen, ſhrubby plants; or the full grown Summer's ſhoots, in September, October, &c. or taking the ſhoots of the former year in any of the Spring months.

Obſerve, that in proceeding to the work of ſlipping, to ſlip only the moderate ſide-ſhoots, ſuch as may be readily detached without tearing the bark or wood of the mother branch conſiderably, ſtrip off any leaves at bottom, and then giving each ſlip a gentle twiſt in that part to promote a free emiſſion of fibres for roots, dibble-plant them in rows ſix inches aſunder, inſerting each about two parts of three in the ground, giving moderate waterings in dry weather in Summer, and keep them clean from weeds; and they will root at bottom, ſhoot at top in Summer, and form proper plants by Autumn following; managing them as the cuttings.

Or as in ſeveral of the low, branching, fruteſcent, or ſmall ſhrubby plants, having their branches coming out near the root, emit fibres in the earth, they may be eaſily ſlipped off with roots to their bottom, forming at once proper rooted plants like ſuckers; planting and managing them as above.

By

By Rooting-branches.

Most of the trailing-radicant ſhrubby plants, extending their branches naturally along the ſurface of the ground, emit roots in the earth, and that being cut off in lengths and planted, each will form a diſtinct plant; ſuch as Ivy, Periwinkle, Radicant Bignonia, or Trumpet-flower, &c.

So that as the branches of theſe kinds of trailing-rooting woody plants, when permitted to proſtrate themſelves along the ground, they root therein, at almoſt every joint, in Summer, and in Autumn, Winter, or Spring following may be ſeparated from the mother plant, and divided into lengths as aforeſaid, of from ſix or eight to ten or twelve inches, ſo as each be furniſhed with roots as above, and plant them in the nurſery, or where wanted, they will grow freely, and form ſo many ſeparate plants of their reſpective kinds.

By Roots.

Some kinds of trees and ſhrubs producing long horizontal roots near the ſurface of the ground, which being cut off and divided into ſhort lengths, and planted ſeparately, they will emit fibres in the earth and ſhoots above, and become proper plants.

This however may in particular be practiſed occaſionally in default of other means of propagation, ſuch as the want of ſeed, ſuckers, or proper branches or ſhoots for layers, cuttings, grafting, &c. and the proper ſeaſon for this operation is the Spring, about February or March, opening the earth, and cut

cut up ſuch roots as above, of about a quarter or half an inch thick, divide them in from three to four or ſix inch lengths, and plant them in a bed of moiſt earth, in rows wholly within the ground an inch or two deep, and they will ſtrike root below and ſhoot out above; or ſome particular ſcarce ſorts may be planted in pots and plunged into a hot-bed or bark-bed, which will greatly forward their ſhooting.

By Grafting.

The propagation of trees and ſhrubs by grafting, conſiſts in taking ſome cuttings of young ſhoots of one tree, and inſerting them into the ſtock or ſtem of another, and the ſhoot ſo inſerted, unites with the ſtock of the tree in which it is engrafted, ſhoots up and becomes the tree, ſimilar in all reſpects to that from which the ſhoot or graft was taken, and which is a certain method of propagation, ſo as to continue any deſirable variety of tree or ſhrub always the ſame.

Grafting, however, is more generally practiſed for the ſeveral kinds of fruit trees than for the ornamental trees and ſhrubs of the pleaſure ground, or foreſt trees, &c. in all of which grafting is only practiſed occaſionally to ſome particular ſorts which either do not furniſh ſuckers, or layers, or that do not ſucceed by layers and cuttings, and is occaſionally practiſed in that caſe, in raiſing the deſirable varieties either of any curious variegated-leaved, or double-flowered kinds, or ſuch other eminent varieties of trees or ſhrubs which do not furniſh any other ready means of propagation, or even to ſuch as do, the propagation may alſo be occaſionally practiſed if thought more expedient in propagating any valuable ſorts.

But

But as to the fruit tree kinds, when designed to have them produce their respective varieties of fruit in their peculiar perfection, they, in the greater part, require either to be propagated by grafting or budding, or some occasionlly by layers, cuttings and suckers, as explained under their respective articles.

In the operation of grafting, it must be observed that the stocks on which it is to be performed, and the tree from which the grafts are taken must generally be of the same family or genus, or a very near kindred, by the characters of their flowers, otherwise they will not succeed; as for example, if required to propagate the Variegated Sycamore by grafting, it must be performed upon seedling stocks, either of the Common Sycamore, or of any other of the Maple tribe, under the genus *Acer*, the same of all the other tree and shrub kinds: as also of the fruit tree class, as for instance, the Apple must always be grafted upon some kind of apple stocks raised from the kernels of any of the apple kind, both of the wild crabs and cultivated apples; the same of pears, plums, cherries, &c. which should always be grafted, &c. upon stocks of their own kind.

The stocks on which to perform the grafting may principally be raised from seed or suckers, as directed in the general propagation of trees by these methods; and when the stocks so raised, are from a quarter or half an inch to an inch thick, they are of a proper size for grafting; though grafting may also be occasionally performed upon stocks of two or three inches thickness, by the methods hereafter explained; but the general grafting should always be performed upon small stocks, from the size of a large goose quill to half an inch or an inch thick.

Or grafting may be occasionally performed upon the branches of large trees, which is sometimes practised upon those of the fruit kind, particularly when

when designed either to renew the head or any particular branch with young bearing wood, or with a different variety of the fruit, or have two or more different varieties of the same kinds of fruit of the same family on one tree; or the same may be practised on any of the ornamental tree and shrub kinds for the sake of variety; keeping in mind that the different grafts, and the stock or tree on which they are to be grafted, must be always of the same family, for the reasons before-mentioned.

Grafting is effected by several different methods, such as by Whip-grafting—Cleft-grafting—Crown-grafting—Side-grafting—Root-grafting—Grafting by Approach, or Inarching.——See each under its proper head.

In all the methods of grafting, the head of the stock is to be cut off for the insertion of the grafts, at from six inches to five or six feet, according to whether the tree, &c. is intended for a dwarf, half standard or full standard, and the stock is then to be prepared for the reception of the graft, as directed under each method, inserting generally but one graft in each stock for common whip-grafting and cleft-grafting, or two, three, or more on a stock, as in crown-grafting.

The grafting may be performed both in low and tall stocks, according as required to have the tree advance with a low or high stem; and that for fruit trees, when required to have them with dwarf stems for to form low heads, branching out near the ground for wall trees and espaliers, they must be grafted low in the stock, at about six or eight inches from the bottom; so as they may branch out near that part, in order that they may cover the wall and espalier regularly quite from the bottom to the top with branches; and when intended to have half or full standards, the grafting must be performed upon tall stocks, at from three or four to six or seven feet from the ground, that they may branch out

out at that height to form the head; or if dwarf ſtandards are required, either of fruit trees, or ornamental trees or ſhrubs, that are raiſed by grafting, may perform it on lower ſtocks, at about from twelve or eighteen inches to two or three feet height.

The ſeaſon for grafting is in Spring, in February and March; beginning with the early ſhooting kinds firſt, and finiſh with the lateſt ſhooters, which ſhould generally be all compleated in March or beginning of April.

But ſhould begin to collect the grafts before they are too much advanced in bud for ſhooting; obſerving, the proper parts for the grafts or cions, with which to engraft, are the young ſhoots of laſt year's growth, not older; chuſing thoſe that are moderately ſtrong, ſtraight, and free from ſide-ſhoots and cut them off in lengths of from ſix or eight to ten or twelve inches; tie them in ſmall bundles, and place them with the bottom ends in any border of dry earth; and take them out for grafting as wanted.

Previous to the operation of grafting, ſhould be provided with two good grafting knives, a larger and a ſmaller, a grafting chiſſel, &c. ſome ſtout new baſs mat for bandages, to tie the grafts cloſe and ſecurely in their places; together with a quantity of ſtrong, tough, clayey loam, well beaten, moiſtened, and wrought together, for claying over the grafted parts, to ſecure them from the effects of wet, wind, and ſun, which, if not prevented by this means, would ruin all, by preventing the junction of the graft with the ſtock.

By

By Whip-Grafting.

This is one of the moſt common and ſucceſsful methods practiſed in the nurſeries, and is always performed upon ſmall ſtocks of from a quarter to half an inch ſize in the part where the graft is to be inſerted, or if the ſtock and graft are nearly of a ſize, it will prove very ſucceſsful in this method of grafting; which is effected by ſloping the graft and ſtock, ſo as when applied the parts may exactly fit each other, and are in that manner tied together as whip-thongs are to the ſticks.—See the method as below.

Firſt, with a ſharp knife, cut off the head of the ſtock, at the height intended either for a dwarf tree, half or full ſtandard, as required, agreeable to the rules before given, taking it off with a clean ſlanting cut upward an inch and half or two inches long, and from near the top of the ſlope, cut a ſmall ſlit downward about half an inch, then, having the graft, ſhorten it to four or five eyes, and cut it ſloping at the end, in length and width ſo as that and the ſtock may exactly fit; and a little above the middle of the cut, make a ſmall ſlit half an inch or more upward, forming a tongue, to inſert into the ſlit part of the ſtock, and then quickly inſert the graft or cion, introducing the tongued part into the ſlit of the ſtock, making both edges of the ſlope of the ſtock and graft meet exactly rind to rind, cloſe and even; and in that manner tie them together with a tough ſtring of new baſs mat, winding it ſeveral times round quite from the bottom to the top; and then directly clay the whole over below and above the grafted part, and on every ſide, about an inch thick, cloſing it well every where in a rounding manner, finiſhing it off even and ſmooth, that no air,

wind, wet, or ſun can enter, and is to remain thus until the middle or end of May, when the graft will be united with the ſtock, and begin to puſh, at which time the claying to be removed, and ſoon after the bandages, to give full ſcope for the grafting parts to effect their growth.

By Cleft-Grafting.

This is the next general method of grafting to whip-grafting, and is performed upon larger ſtocks, of from about an inch to an inch and half or two inches thick, by clefting the ſtock two inches down the middle for the admiſſion of the graft, which in this method, is inſerted into the cleft; and is a very ſucceſsful mode of grafting for the larger ſtocks, of the ſize above-mentioned; obſerving as below.

Cut off the head of the ſtock at the height propoſed, either for dwarf trees or ſtandards, as before explained, and then cut one ſide of the ſtock at top, ſloping about an inch and half upward, to one half or leſs of its natural thickneſs above; and with a ſtrong knife or with a grafting chiſſel, cleave the ſtock at top croſſways the middle of the ſlope, about two inches down, keeping the cleft open by a wedge in the ſloped ſide, for the admiſſion of the graft behind, which firſt cut to four, five, or ſix eyes, then ſlope it at the lower end, on two ſides, an inch and half, tapering to the bottom, with the inner edge thin, the other double the thickneſs or more, and with the bark or rind thereof retained; and directly inſert it with the thick edge outward into the cleft of the ſtock at the back of the ſlope or rind ſide, making the rind of the thick edge of the graft join even with the bark of the ſtock exactly rind to rind, inſtantly taking out the wedge from the cleft, which will then cloſe firmly

firmly upon the graft; then bind the ſtock and graft ſecurely with a baſs ligature, and clay over the grafted part with a proper coat of clay, well cloſed every where, as adviſed in the former method of grafting, to defend the parts from the weather, till the latter end of May, or beginning of June, when the graft will have formed its junction with the ſtock, and begin to ſhoot, then may remove the clay, and in a little time after take away the bandages; permitting the grafts to take their full growth all Summer.

In large ſtocks, may occaſionally make two clefts parallel, and inſert a graft in each; or in large ſtocks, the head being cut off horizontally, not ſloping it on one ſide, may make two clefts acroſs the top parallel, as aforeſaid, and inſert four grafts, two on each ſide of the ſtock, the grafts having both edges cut thin, nearly of a thickneſs.

By Crown-Grafting.

This method is by inſerting ſeveral grafts round the crown of the ſtock, generally between the bark and the wood thereof; and is occaſionally practiſed to fruit trees, in ſuch large ſtocks or branches which are too thick or ſtubborn to admit of cleaving, and may be performed on ſuch as are two or three inches thick or more.

Let the head of the ſtock or branch, intended for grafting, be cut or ſawed off horizontally or level; and having the grafts, cut one ſide flat and ſloping an inch and half to the lower end, cutting a ſmall ſhoulder at top of the ſlope to reſt on the crown of the ſtock, then, with a ſmall wooden or iron wedge, ſeparate the rind or bark of the ſtock from the wood, in the part where the grafts are to be inſerted, proceeding from the top downward, about two inches, or may previouſly ſlit the bark

downward that length in each place where a graft is intended, cutting the bark quite through to the wood; then raiſe the bark from the wood on both ſides of the cut for the admiſſion of the graft; thus, in either method, let the graft be introduced with the cut ſide to the wood of the ſtock, thruſting it down between the wood and the bark, reſting the ſhoulder of the graft on the top of the ſtock; and in this manner may engraft three, four, or more grafts quite round the top of the ſtock; and then ſecure them firmly in their places, by tying tightly round the ſtock and graft together with a bandage of ſtrong baſs; and directly clay the whole over the engrafted parts, on every ſide and quite over the crown of the ſtock an inch thick, finiſhing it in a rounding manner, to throw off the wet.

This method of grafting, is performed occaſionally upon large branches of apple and pear trees, either when intended to renew the whole head or any particular part with new bearers, or with any different varieties of the ſame fruit, or to have ſeveral varieties thereof on the ſame tree.

By Side-Grafting.

This is performed by inſerting the grafts into the ſides of branches, &c. without cutting off the head, as in general grafting; and is ſometimes practiſed in fruit trees to fill vacant ſpaces in old wall or eſpalier trees, &c. or to have any particular branch to produce two or more different varieties of the ſame kind of fruit.

It is performed thus, chuſe any of the ſmaller branches, cut off the bark with part of the wood, ſloping two inches the width of the graft, and cut a ſmall ſlit downward, then ſlope the graft to fit that part, cutting alſo a ſmall tongue upward, to intro-

introduce in the ſlit made in the branch or ſtock; and then apply the graft to the branch, introducing the tongue into the ſlit thereof, tie the parts cloſely together, and clay them neatly all round.

By Root-Grafting.

This is ſometimes practiſed in grafting ſome particular curious kind of trees, &c. in default of common ſtocks raiſed from ſeed or ſuckers, &c. of the ſorts required, and is by taking detached pieces of the ſmaller roots of the ſame or any other ſpecies of tree of the ſame genus, cut in lengths of five or ſix inches, and graft them by whip-grafting with ſhoots of the tree or ſhrub intended for propagation, tie and clay them, and then plant them down over the grafted part; the root will emit fibres in the earth and grow.

Grafting by Approach, or Inarching.

Is effected by engrafting the growing branch of a tree into the ſtem or ſtock of another, the graft remaining on the mother tree, &c. till it has performed the junction with the ſtock or tree in which it is grafted, the ſtock and graft, or tree to be engrafted, growing ſo near together as the graft is made to approach the ſtock as it grows on the tree, forming together a kind of arch, hence this method is called grafting by approach, or inarching.

This method is performed occaſionally, both in default of any particular ſort of curious trees not ſucceeding by any of the common methods of grafting, and ſometimes with deſign to raiſe a tree with a full head

as ſoon as poſſible, as any tolerable large branches, of ſeveral years growth, and furniſhed with many top ſhoots, already forming a head, being engrafted by this method will ſucceed, but in the other methods, none but the year-old ſhoots will take; and ſometimes in fruit trees, and in oranges, lemons, &c. it is practiſed for curioſity, to raiſe a new tree bearing fruit the ſame year, by inarching a bearing branch of the tree intended, into the ſtem, ſtock, or branch of any other of the ſame family in the Spring, and it will be ſufficiently united with the ſtock by the July or Auguſt following, to be ſeparated from the parent tree, and thence it forms a new tree, bearing fruit the ſame Summer.

When deſigned to practiſe this mode of grafting, muſt have the ſtock for grafting, and the tree from which you intend to inarch the grafts, ſtanding ſo near together as the branch for grafting can eaſily be brought to approach the ſtock, as is remains growing on the tree, ſo that the ſtocks or tree on which the inarching is to be performed, ſhould either previouſly be planted in the ground near the tree to be inarched, or planted in pots, to be placed near it occaſionally as wanted, either upon the ground, or if the branches of the tree, are at ſome conſiderable diſtance in height therefrom, the pots containing the ſtocks, ſhould be placed upon a ſtage elevated near the branches, convenient for inarching.

The ſeaſon for inarching, is March and April, and they will be united by the July or Auguſt following.

The method of performing the operation is, that having the ſtocks either growing in the ground or in pots, as before obſerved, near enough for the branches to approach them, then fixing on the moſt conveniently ſituated ſhoot or branch, bring it to touch the ſtock, and mark them in the parts where they will the moſt readily join, the ſtock and graft together, and in each part of the ſtock and graft, cut away the bark

bark and wood both of an equal width, about three inches in length, cutting a ſmall ſlit in the branch ſo as to form a kind of tongue, making a ſlit in the ſtock to admit it, and retaining the head of the branch entire, that of the ſtock may be alſo either retained for the preſent, or taken off as ſhall ſeem the moſt convenient for the inſertion of the branch or graft, which apply to the ſtock, the cut parts together as fitted to each other, inſerting the tongue of the branch into the ſlit made in the ſtock to receive it, making both edges of the rind of each join evenly; and with a ligature of ſtrong baſs, tie the parts firmly together, and directly clay the whole over properly on every ſide, and an inch above and below the inſertion of the graft, a ſtake muſt then be fixed in the ground, &c. to which to tie the head of the graft to ſecure it from being diſturbed by the wind.

They are to remain in this manner three or four months, by which time the branch will be firmly united with the ſtock, then cut the grafted branch from the original tree, ſlanting cloſe off to the ſtock to which it is now joined; and at the ſame time cut down the head of the ſtock to the inſertion of the graft, if not done at the time of grafting.

General Care of New-grafted Trees.

In all the foregoing modes of grafting, let the coat of clay, which defends the grafted parts be at times examined, and if it any where cracks or falls off before the the grafts are united with the ſtocks, it muſt be renewed with freſh, in the manner as at firſt, to continue the parts well guarded from the weather, permitting the clay in general to remain till the end of May or beginning of June, when the

the grafts that have ſucceeded will have effected their neceſſary junction with the ſtocks, and begin to puſh forth ſhoots above, then let the clay be wholly taken away in thoſe of the common grafting, and ſoon after may alſo wholly remove the bandages: but in the grafting by approach, let them remain till you ſeparate the graft from the mother tree, when it will be proper to tie them anew with a freſh bandage, as being more liable to be blown out by the wind than the other grafts.

Let the grafts ſhoot freely all Summer, ſome ſorts will ſhoot ſtrong and form tolerable heads by the Autumn following; obſerving, however, if any advance with only one or two long naked ſhoots, and it is required they ſhall form full heads, may pinch the young ſhoots the ſame Summer, in June, to three or four eyes, they will emit ſo many lateral ſhoots the ſame year, forming a head of fuller growth; or if not pinched as above the firſt Summer, they, if required, may be cut down next Spring to a few eyes, to produce laterals, as above; but this operation of pinching in Summer, or cutting down the firſt young ſhoots from the graft, in the Spring following, is more immediately eligible in fruit trees, eſpecially thoſe deſigned for walls and eſpaliers, that they may advance with a full head of branches quite from the bottom; or, even for ſtandard fruit trees of every denomination, when required to have them form full and more regular ſpreading heads, it is neceſſary alſo either to pinch or cut down the firſt ſhoots, as above, to obtain a ſupply of lateral branches proceeding regularly from the beginning.——See the management of the *fruit trees* in the firſt volume.

When the grafted trees have formed heads of two, three, or four years growth, they will be proper for final tranſplantation where they are to remain.

By

By Budding or Inoculation.

The propagating of trees and ſhrubs by budding or inoculating, being one of the moſt curious modes of propagation, is effected by the inſertion of a ſmall bud of any particular tree or ſhrub into the ſide of the ſtock, ſtem, or branch of another of the ſame family, and it uniting with the ſtock, &c. ſhoots forth into the branches, and becomes the new tree the ſame in every reſpect as that whence the bud was detached, both in growth, leaves, flowers, fruit, ſeed, &c. ſo is a moſt certain mode of propagation, for increaſing and continuing any choice varieties of trees and ſhrubs, permanent in their reſpective peculiar properties, either in fruit, foliage, flowers, or variegations, the ſame as by grafting, layers, cuttings, &c. and is with facility practiſed to ſuch trees as do not ſucceed by any of thoſe, or any other methods of propagation, though almoſt any kind of trees, &c. which ſucceed by grafting, will alſo take freely by budding.

But budding is more particularly practiſed in propagating the choicer ſorts of ſtone fruit trees, as peaches, nectarines, almonds, apricots, plums, cherries, &c. and only occaſionally in the propagation of the ornamental trees and ſhrubs of the pleaſure ground, to ſuch deſirable varieties as do not propagate readily any other way, or that budding ſhall prove the moſt convenient and ready method, ſuch as the propagating any of the variegated-leaved ſorts, double-flowered, or other beautiful flowering kinds, as either will not retain their properties from ſeed, and yet do not furniſh ſuckers or ſhoots conveniently ſituated for laying, or that will not ſucceed by layers or cuttings, &c. and in all of which

caſes,

caſes, the propagation of the deſirable ſort may be effected by budding

The operation of budding or inoculating, conſiſts, as before hinted, of taking a ſmall bud from a young ſhoot of the tree or ſhrub intended for propagation, in Summer, detaching the bud, with part of the bark, an inch long, and inſerting it into the ſide of the ſtock or ſtem of any tree of the ſame genus, without cutting off the head of the ſtock, only making a ſlit in the bark for its reception, ſo introducing the bud between the bark and wood, as hereafter explained, it unites with the ſtock the ſame Summer, but remains dormant till Spring following, when the ſtock being headed down to the inſertion of the bud, the bud then ſhoots forth, making one ſtrong ſhoot from one to two or three feet length the ſame year; and which, when they are of from two or three to four or five years old, the trees, &c. will be of proper growth for final tranſplanting where they are to remain, and at that age the fruit tree kinds will alſo begin to bear.

In budding, it muſt be obſerved, as in grafting, to be furniſhed with proper ſtocks on which to inſert the buds either of the ſame genus or very nearly allied thereto, being of the ſame claſs, agreeable to the botanic ſyſtem, for the buds will not take upon ſtocks of a different genus and botanic claſs; as for example, that in budding the Moſs-province Roſe, which producing but very few ſuckers, is frequently propagated by this method, and the proper ſtock muſt be any of the roſe kind under the genus *Roſa*; and ſo of all other trees and ſhrubs that are propagated occaſionally by budding; and in the fruit tree kind, as in peaches, nectarines, and almonds, that although theſe kinds, being all of the ſame genus, ſucceeding by budding upon one another, yet are the moſt ſucceſsful upon plum ſtocks, which though not of the ſame family or genus, are of the ſame botanic

claſs

claſs and order in the characters of the flowers, otherwiſe they would not ſucceed; and the apricot being of the genus *Prunus*, or plum, it ſucceeds upon the plum ſtock; the plum ſhould have ſtocks of any of the plum kinds; and the cherry, although it is a ſpecies of *Prunus*, or plum, does not ſucceed well on any but cherry ſtocks, of any kind of the cherry tribe, —See the *fruit tree arrangement* in the firſt volume.

The ſtocks of the different ſorts may be raiſed either from ſeed or ſuckers, by the methods directed in raiſing young trees, &c. under thoſe heads; and when they are from about a quarter or half an inch to an inch thickneſs in the part where the bud is to be inſerted, are of proper ſize for budding.

The proper parts of trees, &c. from which to take the buds, are the young ſhoots of the ſame year, which will be arrived to an eligible growth to afford proper buds in June, July, and Auguſt.

Obſerve, the budding may be occaſionally performed both low in the ſtock near the ground, if to form dwarf trees and ſhrubs, or towards the middle or top, at from three or four to five or ſix feet height; obſerving the ſame rule as in grafting both to have dwarf trees, half and full ſtandards, and for wall trees and eſpaliers in the fruit tree kind, by budding lower or higher in the ſtock, according to the nature of the tree or ſhrub, or as the caſe requires, agreeable to the above hints.

The ſeaſon to perform the budding, is from about the middle or latter end of June or beginning of July till the middle of Auguſt, according to the nature of ſhooting of the different kinds of trees, as it is the young ſhoots of the ſame year only, which afford the proper buds, as before obſerved, and which will not be arrived to a proper growth to furniſh good buds before the above period, therefore, according as the budding is to be performed, cut off a quantity of young ſhoots, a few only at a time,

time, chuſing thoſe of moderately ſtrong clean growth, free from ſide-ſhoots; and from which, the buds are to be detached one at a time, as they are to be inſerted, in the method as below; obſerving, according as each ſhoot is taken out for detaching the buds, to cut off all the leaves, only retaining about a quarter or half an inch of the foot-ſtalk of each remaining to each bud.

As to performing the operation of budding, there is but one general method as follows; being furniſhed with a proper budding knife, having a flat ivory haft with which to open the rind of the ſtock for the admiſſion of the bud; and a quantity of new baſs mat for bandages to bind round the budded parts; then, with a knife, clear the ſtock from lateral ſhoots, leaving the head on till next Spring; and the ſtocks being thus trimmed, prepare to inſert one bud in each; fixing on a ſmooth part of the ſtock, at the proper height either to form dwarf trees, or quarter, half, or full ſtandards, by the rules before exhibited, and, with the budding knife, cut a tranſverſe inciſion in the bark of the ſtock, through to the wood thereof, and from this croſs cut, make another perpendicularly downward an inch and half long, through alſo to the wood, both cuts forming together the reſemblance of a T; which done, having the ſhoots from which to take the buds ready, and taking one of them, of the ſort intended, and having cut off the leaves to about a quarter of an inch of the foot-ſtalk of each leaf, as before obſerved, proceed to take off a bud therefrom for inſertion, by entering the knife into the ſhoot about half an inch below an eye, cutting ſlanting half way into the wood, bringing it out with a clean ſmart cut, about an inch above the eye or bud, detaching it from the ſhoot with a portion of the bark and wood together, then, inſtantly, with the point of the knife and thumb, detach the woody

woody part of the bud clean off to the rind and bud, noticing whether the gem of the internal part of the eye of the bud remains, if a little hole appears in that part it is gone, and the bud being uſeleſs, another muſt be prepared that is proper, which being ready, and placing it with the back between your lips, while with the flat haft of the knife you ſeparate the rind of the ſtock from the wood on both ſides of the perpendicular cut, and then as expeditiouſly as poſſible, inſert the bud at top of the ſlit, with the innerſide next the wood, ſlipping it gently down between that and the rind, to the bottom of the perpendicular inciſion, with the eye and remaining part of the footſtalk of the leaf evenly in the opening of the ſlit, making the top of the bud join in even with the croſs or tranſverſe cut above, cutting off any part that may be too long, ſo as it may fit in exactly; cloſing the bark every where to the bud; and immediately let the parts be tied cloſe with a flat ligature of ſtrong baſs, that has been moiſtened in water, to render it more pliant and tough; beginning the tying a little below the place of inſertion of the bud, bringing it regularly round the ſtock and bud together, and continuing it upward, leaving only the eye of the bud clear, carry it quite above the horizontal inciſion, ſo tie it there ſecurely, no claying being neceſſary, as in grafting; and this finiſhes the operation for ſome time, till the buds have united with the ſtock, when the bandages muſt be looſened; and next Spring the head of the ſtock cut down.

About three or four weeks after the budding, the buds will have joined with the ſtock, the parts ſwelling and appearing plump and freſh, when it is proper to looſen the bandages, that the bud may have full liberty of growth to ſwell, though it will not ſhoot till next Spring, at which time the head of the ſtock muſt be cut off, as above obſerved; and as directed below.

In Spring following, therefore, in February or beginning of March, let the head of the ſtock be cut off ſloping, either cloſe behind the bud, or about three or four inches above, which part will ſerve whereto to faſten the firſt ſhoot from the bud in Summer, but muſt be cut down cloſe the Spring following, to the top of the bud aforeſaid; and thus in either method of heading down the ſtocks, all the nouriſhment will then be directed to the ſupply of the buds, which will ſoon after ſhoot forth ſtrongly, each one ſtrong ſhoot, obtaining from one or two, to three feet length by the end of Summer; being careful all that ſeaſon to diſplace all ſhoots from the ſtock below the bud, permitting none but the bud-ſhoot to remain.

As to the farther management of the young budded trees, that when intended to have any form full or ſpreading heads, the above-mentioned firſt ſhoot may be ſhortened either the ſame Summer it is produced, by pinching it down in June to a few eyes; or in Spring following, prune it to the ſame length, ſo as in either method it may throw out lateral ſhoots from the lower eyes the ſame year, to furniſh the head with a proper ſupply of branches from the beginning, obſerving in particular, that in the fruit kinds, this method of heading the firſt ſhoots of the bud, as above, is more immediately neceſſary in order to form a good head at firſt, both for wall trees, eſpaliers, and ſtandards.——See the *fruit trees* in the firſt volume.

When the young budded trees have formed heads from one, two, or three, to five or ſix years old, they will be proper for planting out finally where wanted, either in the pleaſure ground, for ornament, or the fruit trees alſo tranſplanted into the other garden departments.

THE

THE

GENERAL METHOD of PLANTING

THE

TREES AND SHRUBS

IN THE

DIFFERENT DISTRICTS

OF THE

PLEASURE GROUND, &c.

THE trees and ſhrubs raiſed in all the foregoing methods of propagation, when they are of from three or four to five, ſix, eight, or ten years growth, in the nurſery, of the ſizes formerly hinted, according to their reſpective natural ſtructures, whether as trees, ſhrubs, or underſhrubs, let them be planted out accordingly in the different diviſions of the pleaſure ground plantations.

The *tree kind*, or ſuch as grow with tall ſingle ſtems, to a conſiderable height before they divide into branches, that when from five or ſix to eight or ten feet high, are proper for general tranſplanta-

tion; or occaſionally, in the deciduous kinds particularly, thoſe of twelve, or fifteen feet, or more, may alſo be tranſplanted for any particular purpoſe, either where a full ſhade, ſhelter, or blind, &c. is required as expeditious as poſſible; but, as aforeſaid, thoſe of five, ſix, or ſeven feet are of the moſt eligible ſize for general planting, as ſuch will always take root more effectually, and be of more ſucceſsful growth in the end, than larger tranſplanted trees.

The *ſhrub tribe*, or ſuch as generally either divide low into branches, or the main ſtem forks off or divides near the ground into others; or ſuch as commonly riſe with more than one ſtem from the bottom; are proper for final tranſplantation into the ſhrubbery, and other ornamental plantations, when they have formed branchy heads from two or three, to four, five, or ſix feet high, or more, though ſome large kinds, denominated ſhrubs, may be ſafely removed of eight or ten feet growth.

Underſhrubs, or thoſe very low, ſlender, ſhrubby tribe, or ſome being ſomewhat between a woody and an herbaceous nature, but durable in root, ſtems, and branches, like the common ſhrub kind, may be planted out where required, in the fronts of ſhrubbery clumps, &c. when from a few inches to a foot, or half a yard, or three feet high, according to the nature of growth of the different ſorts, as ſome, under this denomination, are of very diminutive growth, others of but humble ſtature; and calculated chiefly for adorning the fronts of ſmall ſhrubbery compartments, flower borders, and ſuch like diviſions.

The diſpoſition or order of planting the various trees and ſhrubs in the pleaſure ground, ſhould be in different arrangements, as formerly obſerved, to effect as great a diverſity as poſſible in the general plan, by forming the following different diviſions and compartments, or ſuch of them as the ſcope of ground admits of, viz. Lawns—Shrubberies—

Tre

Tree plantations——Wilderneſſes——Groves——Thickets—Clumps—Avenues—Shady walks——Wood walks—Serpentine walks——Straight——walks—Receſſes—Glades, or Opens—Boſquets—Ranges of Trees—Dotting trees ſingly—Groups of trees—Hedge-rows of trees—Hedges—Arbours——Labyrinths or mazes——Rookeries: Alſo to adorn garden buildings, as Temples—Grottos—Rock-work—Ruins—Hermitages: Likewiſe Waters, &c.——See each explained under their proper heads, as hereafter.

As ſome extenſive pleaſure grounds and eſtates, may afford various ſituations, expoſures and ſoils; there are few of the hardy trees and ſhrubs in the catalogue arrangement thereof, but what will proſper in any common ſoil and ſituation in all aſpects; generally, if there are any very low or marſhy premiſes, allot the aquatic tribe for thoſe places, ſuch as Willow, Alder, Poplar, Birch, &c. as the other kinds will not proſper in very wet grounds, eſpecially where ſubject to inundations; but in any common dry ſituations, and all upland grounds, may have any of the tree and ſhrub kinds, both of the deciduous and evergreen tribe, as in the catalogue arrangement, and even the aquatic kinds, as above, will ſucceed almoſt in any ſoil; and may be introduced accordingly among the other tree kinds, where required, for variety.

LAWNS, as we formerly obſerved, being deſigned as ſpacious open ſpaces of graſs ground, extending immediately from the front of the main habitation, in dimenſions from a quarter of an acre to one, two, or many acres, each ſide ſhould have ornamental plantation compartments of hardy trees and ſhrubs, diſpoſed in ſweeps, curves, and projections, with breaks between the compartments; planting the lower ſhrubs toward the front, and the taller ſhrubs and tree kinds behind, generally having the deci-

duous and evergreen kinds in ſeparate compartments; except juſt dropping here and there ſome evergreens in the deciduous clumps, to diverſify the plantations more conſpicuouſly, in Winter particularly, when the deciduous trees and ſhrubs are deſtitute of foliage.

SHRUBBERIES, are plantations of ſhrubs, or of ſhrubs and trees together, in the pleaſure grounds, &c. continued from the boundary plantations of the lawn, if any, or from the main walks, diſpoſed moſtly in diſtinct or detached compartments of various different figures and dimenſions, ſome in clumps, others in more extended plantations; the compartments being in ſome places near together, in others more or leſs diſtant, in different directions to avoid too ſtiff uniformity; alloting in ſome places particular open ſpaces, ſome for walks, others for ſpacious opens of graſs ground, or for water, or a flower garden, &c. having all ſuch diviſions alſo bounded with ſhrubbery compartments, in various ſweeps, curves, &c. and the outward boundary of the pleaſure ground, parks, paddocks, &c. may have continued or running ſhrubbery plantations of due width to admit of ſerpentine walks running through the middle, in the order hinted in the introductory part of the pleaſure ground.

In all of which, the compartments of ground for the reception of the trees, in the afore-mentioned diviſions, in clumps, &c. muſt be digged ready for planting; obſerving, thoſe for detached clumps, ſhould generally have the ground gradually raiſed in a rounding manner, higheſt in the middle; alſo, occaſionally ſuch of the extended or running plantations, where the ground favours it, ſhould likewiſe be raiſed gradually from the front towards the middle or back part, eſpecially where the plantation is to conſiſt principally of the ſhrub kind, that they may

may ſhew and raiſe themſelves, one behind another, to better advantage than when on a perfect flat or level ground.

In planting the ſhrubbery diviſions, be careful always to arrange the taller trees and ſhrubs more or leſs backward, in proportion to their natural height when arrived to full growth, ſo lowering them in the ſame order forward, as near as poſſible, gradually to the loweſt ſhrubs in the front; planting ſome of the clumps entirely of ſhrubs, others of trees and ſhrubs together, in the order above obſerved, and ſome of the larger compartments behind, may be wholly of the tree kind, generally alloting the deciduous and evergreen kinds ſeparate clumps, in the greater part; obſerving to allow the whole proper room, according to their nature of growth, whether as trees, ſhrubs, or underſhrubs; the taller tree and ſhrub kinds placed backward in the clumps, may be ten feet diſtance, the next ſize five or ſix, and the ſmall ſhrubs three or four feet aſunder, not ſtudying any particular uniformity of planting in rows, &c. but rather avoid it, only obſerving regular diſtances, as above, and ſomewhat of the quincunx order, that the different kinds may appear more diſtinct and conſpicuous; digging for each plant a round aperture, of width and depth proportionable to the roots, generally beginning the planting with the taller plants firſt, towards the middle or back part, as aforeſaid, and ſo on with the others in regular gradation of height, placing each plant upright in its reſpective aperture, making the roots ſpread evenly, and fill in the earth regularly about them to the top, and then tread it gently all around.

Tree Plantations for ornament, conſiſting wholly of tree kinds, either in the pleaſure garden, where extenſive, or in any out grounds, both in plains, the ſides and tops of hills, and in any low ſwampy

ſwampy or boggy ſituation, may be introduced to conſiderable advantage in embelliſhing, improving, and enriching the proſpect of the premiſes and the adjacent neighbourhood, and in giving an air of grandeur to a country ſeat, and to an eſtate in general; and ſuch plantations may conſiſt of all the different ſorts of the hardy tree kinds mentioned in the catalogue arrangement, both of the deciduous and evergreen tribe, each tribe, however, generally diſpoſed in ſeparate compartments, except juſt dotting here and there an evergreen among the deciduous trees.

All the hardy tree kinds exhibited in the catalogue, will thrive in any common ſoil and ſituation, and, as before noticed, that as in conſiderable eſtates or premiſes, there may be ſeveral different ſituations, ſoils, and aſpects, and ſome probably lying waſte, there are ſufficient choice of trees that will ſucceed in each; obſerving, that in any common or moderately dry-lying ſituation, either level, riſing, or elevated, of any tolerable ſoil, may plant almoſt any of the tree kind; and, in low ſwampy or marſhy grounds, have principally the aquatic trees, ſuch as Alders, Abele, Willow, Poplar, Birch, &c. which ſorts will grow almoſt any where, and may in particular be made to ornament any waſte watery places, where other kinds will not ſucceed; and, as in ſome places, there are tracts of waſte ground, which may be conveniently and advantageouſly ornamented and improved with hardy tree plantations, no opportunity ſhould be loſt in appropriating part thereof to plantations of trees, which always exhibits an air of magnificence and importance.

They may be diſpoſed in various ways, both in compartments, clumps, running plantations, groves, thickets, avenues, woods, &c. grand walks, groups, detached ſtraight ranges, in ſingle, double, and treble rows, &c. in different places, in conſiderable premiſes.——See each under its proper head.

The

The places designed for any kind of tree plantations, as above, that for the reception of the trees, the ground may either, where not very considerable, be wholly digged, or trenched, or prepared by good deep ploughing, where it admits of it, or in very extensive premises, may only dig a wide round aperture for each tree, at eligible distances.

As to the distances for planting the tree kinds in the different ornamental plantations, they may be varied in the different divisions, according to the design, by arranging them from five or six, to eight, ten, fifteen, or twenty feet distance, or more, according whether intended to have close-planted compartments, either in clumps, or any continued thickets, or more open and airy light plantation, groves, avenues, &c. for they should be varied, by having them in some places forming close plantations, in thickets or dark shade; others more open and light, in each method varying it more or less in different parts, to cause the greater diversity in the general scene.

Observe for the general part, in these plantations, not to regard planting in straight lines, except in regular groves, avenues, grand walks, or where intended to have detached ranges of trees; but in any continued close or open plantations, clumps, woods, groups, &c. straight planting may generally be dispensed with, keeping in view, however, some regularity, even in the promiscuous planting, either in close or open plantations; observing something of the quincunx way, as advised in the shrubbery.

In proceeding to plant the trees, let them be digged up out of the nursery, with their full spread of roots; and let such as require it, be trimmed by pruning off all strong lateral shoots from the sides of the stem, retaining some of the smaller to draw the sap more effectually; and if any very rambling irregular

irregular ſhoots of the head occur, either prune them quite out or reduce them to order, being careful to preſerve the leading top entire, and by no means trim up the head too cloſe to a ſingle ſtem or leading ſhoot, as often practiſed, but retain a ſufficiency of the upper regular branches, to form a ſomewhat full head, and in ſome of the evergreens particularly, ſuch as the Pine, Fir, Cedars, Cypreſs, &c. which naturally branch out low, ſhould be but very little pruned up at firſt; but obſerving in tranſplanting large deciduous trees, to reduce the branches, by thinning out the moſt irregular, and ſhorten the moſt rambling, ſo as to render it ſomewhat in proportion to the roots, a moderate head of branches being neceſſary in trees of all ſizes at planting, according to their growth, both to preſerve them of a more beautiful form, and that the branches may draw nouriſhment more abundantly, both from below and from the external air, &c. to promote the free rooting and growth of the trees; and as to the roots, retain the full ſpread thereof, only retrench any broken parts, and ſhorten very long ſtragglers.

Then, the trees being thus ready for planting, and the holes digged for their reception at the proper diſtances, before explained, plant a ſingle tree in each aperture, with the ſtem upright, and the roots ſpreading regularly, trim in the earth over them equally; ſhaking the tree to make the mould fall in between the ſmall roots and fibres, and when all the earth is filled in to the top of the hole, tread it moderately; and if any tall trees ſhall require ſupport of ſtakes, to ſecure them againſt tempeſtuous winds, let them be ſtaked as ſoon as planted.

In late Spring planting, or where the ground is light and dry, a good watering to the roots at planting, to ſettle the earth moiſt about them, it will prove very beneficial; and if convenient to repeat the waterings in the advanced dry Spring ſeaſon,

ſeaſon, once in a week or fortnight, they will take freſh root more expeditious and effectually, and ſhoot at top.

WILDERNESS PLANTATIONS, confiſts both of trees and ſhrubs, arranged in various diviſions and compartments, ſomewhat in the ſhrubbery way, but generally in ſome regular order and arrangement; having both open and ſhady walks arranging between the plantation diviſions in various directions, terminating internally, in ſome capacious open ſpaces, in circles, octagons, &c. in graſs ground, water, a flower garden, or ſome light ornamental building, a temple, grotto, hermitage, &c. diſpoſed in different diviſions; the walks being in ſome places ſtraight and capacious, others ſerpentined, and ſome narrow and ſhady, for more private walking.

All the walks and other open ſpaces, being bounded on every ſide with tree and ſhrub plantations, in various diviſions and compartments, which in ancient gardening, were commonly ſurrounded each diviſion, with regular hedges of different ſorts; but in the modern ſtyle, hedges are entirely omitted, both to avoid too ſtiff uniformity, and to admit of a full proſpect of the different ſhrubs, and trees from the walks, &c. planting the taller trees and ſhrubs the moſt backward in the ſeveral compartments, and the lower ones forward, in proportion to their natural growth, lowering gradually to the ſmalleſt ſhrubs in front, as in the ſhrubbery, &c. and in ſome places, where a cloſe ſhade is required, may have compartments of tree kinds continued quite to the ſides of the walks; obſerving the ſame method of preparing the compartments of ground for the reception of the trees, &c. and way of planting them, as in the ſhrubbery and tree plantations.

GROVES

GROVES are plantations of lofty trees, generally diſpoſed on graſs ground in ſome regular arrangement, and conſiſts of cloſe groves and open groves, planted in rows from ten to twenty, thirty, or forty feet diſtance, or more; and deſigned both to ornament particular departments of the pleaſure ground, parks, and any out premiſes, and to afford ſhady walking in the heat of Summer; alſo as ſhelter to break off the force of impetuous winds from any diviſion required, or from the main habitation, &c. and in all of which, groves of lofty and ſpreading trees, advancing in their natural growth with full heads of branches, expanding equally around, exhibit a noble appearance.

Grove plantations are commonly formed on graſs ground, or ſo as the ſurface of the ground between all the trees be a continued graſs ſward, generally kept moderately cloſe mowed or fed down in Summer for occaſional walking under the ſhade of the trees; or may alſo have ſpaces for ſerpentine or other gravel walks, for walking in when the graſs is either too wet or rank.

A Grove of noble trees arranged on the boundary of a graſs lawn, &c. either near the main dwelling or more or leſs diſtant as ſhall ſeem proper, in aſſemblage with other diviſions of plantations, will have a moſt agreeable effect, or, in extenſive grounds, groves, &c. may be introduced in different diſtricts thereof, in the moſt capacious open ſpaces.

Cloſe groves are deſirable in places where a fuller ſhade may be required; and the trees may be arranged in regular rows from eight or ten, to fifteen or twenty feet diſtance, and the ground between the trees being wholly of graſs ſurface, for walking on occaſionally in Summer, alſo have ſpaces formed for ſerpentine gravel walks, winding between the trees, for dry walking when the graſs is wet, &c. as before obſerved.

Open

Open Groves of ſtately trees, diſpoſed in wide rows on graſs ground, exhibit an air of ſingular grandeur, and are highly in character; the trees being arranged in ſtraight rows, from twenty or thirty to forty or fifty feet diſtance, or more; and, if thought proper, may, along under and between ſome of the rows of trees, have moderate gravel walks, for firm and dry walking under foot, winding under the ſhade and ſhelter of the branches, or between the rows, occaſionally, as may be required, for ſhady, private, or more open and airy walking.

In forming of groves, may have trees of various kinds; but ſhould generally prefer thoſe of the moſt handſome and lofty growth, and regular ſpreading heads, both of the deciduous and evergreen tribe; but have each of theſe planted in ſeparate groves, or there may be groves or rows of different trees ſeparately, as Elm groves, Lime Tree groves, and groves or ſeparate rows of Cheſnuts, Horſe-Cheſnuts, Walnuts, Beeches, Oak, Plane Tree, Maples, Larches, Poplars, Willow, Alder, &c. or all of theſe in one grove, for the greater variety: and of evergreens, there may be Pine, Fir, and Cedar groves, Evergreen Oak, Laurel, Cypreſs, &c. or a grove of all theſe, and other lofty evergreens, will form a pleaſing variety.

In procuring the trees for groves, let them generally be ſuch as are already ſomewhat advanced in growth, being of from five or ſix to eight or ten feet height, that they may at once make ſome tolerable appearance.

Take them up for planting with a good ſpread of roots, prune only any broken parts thereof, and ſhorten the ends of long ſtragglers; and as to the top, prune off all low ſtraggling ſhoots and branches of the ſtem, which, in the deciduous tribe, may be pruned up clean to five or ſix feet, but the evergreens, eſpecially all the Pine, Fir, Cedar, Cypreſs, Arbor-vitæ, and ſuch like kinds, which naturally

branch out low in a ſpreading order, ſhould not be too much pruned up at firſt in the ſtem, and always carefully preſerve the leading top-ſhoot.

In proceeding to plant groves, dig holes ſeparately for the trees at the proper diſtances, either for cloſe or open groves, in the order before hinted, and plant them, as already adviſed, in the ſhrubbery, and the tree and wilderneſs plantations.

If the ground between the trees, thus planted in regular groves, is not already in graſs, it may be laid down level and firm, and ſowed with graſs ſeed in Spring or Autumn, or laid with turf, if ſmall groves; but for any conſiderable plantation, this would be impracticable, or too expenſive; ſo muſt have recourſe to ſeed, as aboveſaid.

THICKETS, are cloſe plantations of trees and the more hardy common ſhrubs together; having gravel walks winding through them under the ſhade thereof, in various directions; and which plantations are deſigned to effect a gloomy ſhade, in contraſt with groves, ſhrubberies, and other more open and light plantations; eſpecially in ſuch parts of the premiſes where calculated to form a wild ſcene, when intended to diverſify the general deſign, either in any low ſituations, declivities, or the ſides of hills, or any riſing ground, alſo on the common level of the general premiſes, to diverſify the plantation diviſion, in different tranſitions of light and ſhade.

Theſe thicket plantations may conſiſt of all the more common hardy tree kinds, cloſely planted from about five or ſix to ten or twelve feet diſtance, being in ſome places planted cloſer, others more diſtant, to exhibit a fuller and lighter ſhade in different parts; having the various ſorts of the moſt common hardy buſhy ſhrubs planted between the trees, both thoſe of upright growth, and all ſorts of hardy climbers,

to

to effect a considerable variety, and so as almost to overspread the surface of the ground in a close thicket, in imitation of a natural thickety wood; having at proper distances, spaces for winding walks traversing the plantation for shady and private walking, so disposed, as the thicket, when advanced in growth, may fully conceal the different walks from each other; and some of the walks should be conducted with intricate serpentine turns, and so as sometimes by a curious winding lead out suddenly or unexpectedly from the gloomy shade into some open space, or to where there is the advantage of some agreeable distant prospect, &c.

CLUMPS, are detached divisions of plantations of trees and shrubs together, or each sort separate, and have great merit in forming the shrubberies and other ornamental tree and shrub plantations of the pleasure ground, having generally either grass ground dividing and continued between the several clumps; or in some parts, wholly gravel spaces between, and the clumps edged with a narrow verge of grass.

In shrubberies, clumps of shrubs, or trees and shrubs together, being distinct compartments, more or less detached from one another, are of various figures and dimensions, and the ground generally raised gradually in a swelling form towards the middle; and as to figure, they are sometimes roundish, oval, triangular, or pentangular-wise, &c. but the angles not regular, having sweeps and projections more or less extended, and of different widths, and the extremities more or less rounding, so varying the size and form of the clumps, to cause the greater diversity, and have them in some places near together, and in others distant, as before observed, under the article *shrubbery plantations.*

In the formation of these clumps for planting, the ground thereof, being raised somewhat in a

 swelling

ſwelling manner, as before hinted, it muſt be wholly digged for the reception of the ſhrubs and trees; planting the talleſt growers towards the middle, and the others in a gradual order of height down to the loweſt ſhrubs in front, as formerly adviſed; and afterwards, the ground of the clumps to be digged annually in Winter or Spring, between the ſhrubs, &c. at leaſt till they are advanced ſo much in growth as to overſpread the ground between them, ſo as nearly to hide the ſurface, and keep down weeds; though when the different ſhrubs in the clumps are kept pruned occaſionally to ſome regular order to preſerve each diſtinct, they appear to beſt advantage.

But clumps ſometimes are formed wholly of trees or large ſhrubs, planted on capacious ſpaces of graſs ground, as that of lawns, parks, &c. the trees and ſhrubs of the clumps being planted diſtant enough to admit of the ſward of graſs forming properly between them; but theſe clumps are not deſigned to be ſo conſiderable as the ſhrubbery compartments; and ſo may only have them of three, five, and ſo on to ten, fifteen or twenty trees, &c. in a clump, varying the number in the different clumps, and they will thus have a very agreeable effect.

AVENUES are ſtraight ranges of the moſt ſtately trees, the rows being from forty or fifty, to ſixty, eighty, or a hundred feet aſunder, forming a ſort of grand walks of capacious width, leading either from a public road to the main habitation or manſion of a country ſeat, ſerving ſometimes as the principal entrance to the dwelling; or ſometimes extending to different departments of extenſive pleaſure grounds, parks, plantations, or any out premiſes of an eſtate; and in all of which, ſome ſpacious avenues of lofty trees convey an air of conſiderable magnificence and ornament; having the ſpaces between

between the rows of trees commonly grafs ground, except where neceffary to have a carriage-way or main entrance to the habitation through the principal avenue, and in which cafe, it muft be of gravel, efpecially of proper width for carriages, &c. along the middle fpace, but otherwife have the whole fpace grafs ground; or occafionally, in fome, may have a handfome gravel walk extending along the middle.

In forming avenues, fhould have principally the talleft tree kinds, and may either have different varieties in the fame avenue, or have it all of one fort, as Elm, Lime, Horfe-Chefnut, Spanifh-Chefnut, Walnut, Beech, Plane Tree, Maples, Poplars, Wild Cherry, &c. or any of the evergreen tribe, as Pines, Firs, Evergreen Oak, though avenues compofed of different varieties oftrees, will have a fine effect.

Avenues fhould be of confiderable width, the rows of trees on each fide, being not lefs than from forty to fifty or fixty feet afunder, but from eighty to a hundred feet, or more, will be the moft in character, fo as when the trees are advanced to full growth, there may be a fpacious clear open fpace between the rows, and the trees in each row being from twenty to thirty or forty feet diftance.

But where there is extenfive fpace, may have a double row of trees on each fide the avenue; allowing thirty or forty feet between the rows in each double range, and the diftance above-mentioned between the trees in each row.

SHADY WALKS of TREES, for fhady and private walking, are occafionally introduced, both in continued plantations of trees, either clofely planted in the manner of thickets or woods, or as groves, fhrubberies, &c. towards, or around the outboundary of the pleafure ground, or along thofe adjoining fpacious lawns; allotting proper fpaces for

the walks, which ſhould be either gravel or ſand, or graſs, occaſionally; or may form ſhady walks, by planting detached cloſe ranges of trees, or trees and ſhrubs together, on each ſide of the walk, which may occaſionally be both in the ſerpentine order and ſtraight; planting the tree kinds and taller ſhrubs behind, and the loweſt next the walk; having the rows of trees on the oppoſite ſides of the walk, planted only at ſuch diſtances, row from row, as to afford the proper ſhade required.

The walks, in both caſes, may ſome be ſerpentined, others ſtraight, as before ſuggeſted, planting the trees, &c. accordingly, and in ſome places have the trees cloſe up to the ſides of the walks, in others have breaks, or vacant ſpaces of graſs ground, &c. in ſweeps or circles, &c. ſo as in ſome places to effect a dark or gloomy ſhade, in others more open and airy.

Serpentine Walks, of gravel or graſs, being ſuch as are conducted in various windings, ſweeps, and turnings, in a natural imitation, and to afford a greater ſource of variety, by exhibiting new and different objects at every different turning; and to give an opportunity of a more conſiderable ſcope of walking; are generally introduced along or between ſome ornamental plantation of trees or ſhrubs, of more or leſs extent, or continued both along the ſides of any ſhrubbery diviſion adjoining a ſpacious lawn, or conducted through any continued cloſe plantation of trees, either in thickets, groves, or through the ſhrubbery compartments; having in ſome places the walks ranging cloſe under the ſhade of the trees, in others more diſtant, and occaſionally along more open ſpaces; and in ſome parts, conducted by bold ſweeps towards ſome open ſpace outward, to have the advantage of proſpect, and to internal opens of graſs ground within the plantation diviſions,

ſions, &c. having alſo, at intervals, vacant graſs opens, in ſweeps, &c. along the ſides of the walk, alternately to the right and left, through the different plantations.

Sometimes ſerpentine walks are continued for private walking around the boundary of the pleaſure ground, having the ground on each ſide raiſed gradually ſloping from the walk to the back part, which being raiſed one or more feet higher than the front, where the ſituation admits, and planted with the taller trees or ſhrubs behind, and the loweſt, next the walk, will have a moſt deſirable effect in ſhewing the plantation to greater advantage.

In forming ſerpentine walks, the ſweeps ſhould not be too frequent and ſudden, nor ought the turnings to be too ſtiff or all of regular dimenſions, in ſome places let the windings advance gradual and eaſy, in others let the ſweeps be bold, ſometimes conſiderably long, and ſometimes ſhort and ſudden, in different parts, ſo as at every turning it may diſcover different varieties in the plantation, &c. which is one particular merit in ſerpentine walks, as well as to afford more extenſive walking than in walks perfectly ſtraight; for ſerpentine walks may be ſo varied by winding them different ways, as to furniſh conſiderable walking within a ſmall compaſs of ground.

STRAIGHT WALKS of TREES in pleaſure grounds, in particular departments, have an agreeable effect; though, according to the preſent ſtile of gardening, ſcarcely any thing of that ſort is admitted, neither ſtraight walks nor ſtraight rows of trees; however, where there is tolerably extenſive premiſes, one or more noble ſtraight walks of handſome trees, appear very ornamental, and the walk itſelf may either be wholly of graſs, or may be gravel, verged with graſs on each ſide; and the trees ſhould generally

either

either ſtand on graſs ground, or along a ſpacious border on each ſide of the walk, which may be from fifteen or twenty, to thirty or forty feet wide, having a row of trees on each ſide, of from ten or fifteen, to twenty or thirty feet diſtance in the row.

In walks of this kind, may have different ſpecies and varieties of trees, both of the evergreen and deciduous tribe, ſeparately; and in each of theſe claſſes, may either have walks all of one ſort of trees, or of different ſorts, in aſſemblage, which will effect a more deſirable variety.

Generally, however, have a collection of the more curious kinds, and of the handſomeſt growth and different foliage, ſuch as, of the evergreen claſs, the choiceſt kinds of Pine Trees, Firs, Cedars, Cypreſs, Arbor-vitæ, Junipers, Hollies, Laurel, Evergreen Oaks, Arbutus, Bay Tree, &c. and of the deciduous family, may have ſome of the more curious ſorts, as Horſe-cheſnuts, Planes, Flowering-Maples, Common Cheſnut, Almond Trees, Catalpa, Laburnums, Lilacs, Tulip Tree, Tupelo Tree, Acacias, Liquidambar, Service Trees, Mountain Aſh, Flowering Aſh, &c. or any of the taller kinds occaſionally, as Elm, Lime, Sycamore, Norway and American Maples; Beeches, Poplars, Willow, &c. in aſſemblage, in large pleaſure grounds, parks, &c.

Wood Walks may be introduced in various ſerpentine windings, through any continued plantation of the common hardy trees and ſhrubs of the woods, &c. and for which purpoſe, allot a particular department, and let the trees, and ſhrubs of various ſorts be cloſely planted in the manner of a natural wood or thicket, before deſcribed, and as juſt below, which will furniſh an agreeable variety in the general plan, and afford the opportunity of more private and ſhady walking, when required; having

having the borders of the walks ornamented with various ſorts of wood flowers, and other ſmall plants that grow under ſhade, and the walks laid with gravel, ſand, or any hard dry materials.

WOOD PLANTATIONS, in imitation of a natural wood or thicket, &c. are admitted in conſiderable pleaſure grounds, on the boundary of any ſpacious open, nearly in the order of thickets, before explained, to diverſify the general plantation diviſions, in contraſt with groves, ſhrubberies, boſquets, and other more open and light plantations, as formerly intimated; and may conſiſt of all ſorts of the common hardy trees and ſhrubs, which grow naturally in woods &c. as Beech, Cheſnut, Maple, Birch, Hazel, Oak, Aſh, Wild Service, Mountain Aſh, Wild Cherry, Hornbeam, Whitebeam, Planes, White-Thorn, Black-Thorn, Spindle Tree, Dog-wood, Berberry, Crab Tree, Bullace Tree, with various ſorts of other hardy trees, as well as of the ſhrubby and underſhrubby tribe, together with all the hardy climbing and trailing woody plants; and a collection of the different ſorts of wood flowers, as Primroſes, Violets, Wood-Anemones, &c.

That in planting this diviſion, let the whole, both trees, and ſhrubs, &c. be cloſely planted in a natural order, without any regard to regularity in the arrangement; leaving proper ſpaces for wood walks, before deſcribed, both in the ſerpentine order, in various turnings, and in ſome places ſtraight; alſo allot ſome capacious vacant ſpaces, or breaks internally, ſerving as glades and opens in different parts of the plantations; obſerving to plant the tree kinds firſt, then all the undergrowth of ſhrubs, underſhrubs, and climbing tribe, between the trees, cloſer or more diſtant, in different places, to effect a greater diverſity; and next the walks have various ſorts of herbaceous wood plants,

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as Primroſes, Violets, Wood-Anemones, Daffodils, Wood Strawberries, and ſuch other kinds which proſper under the ſhade of trees, &c. and let the walks be either edged with a narrow verge of graſs, or with any low, cloſe, tuſty, wood plants and lay the walks with gravel, ſand, or ſcrapings of turnpike roads, or any dry hard ſubſtances.

Recesses, are detached compartments, having internal opens for private retirement, formed by tree and ſhrub plantations, almoſt wholly ſurrounding any particular open ſpace of graſs ground, or gravel, &c. as convenient; introduced in ſome retired part of ſhrubberies, and other diviſions of the pleaſure ground; the entrance thereto leading from any main walk or lawns, &c. generally by ſome private ſerpentine turnings, bounded on either ſide with ſhrubberies cloſely arranged.

Glades, are open light ſpaces, which ſhould be occaſionally introduced in the midſt of any continued cloſe plantation, in thickets, wood-works, or any cloſe tree and ſhrub plantations, to effect a greater variety of different tranſitions of common ſhade, gloomy ſhade, and from theſe to ſome light open diviſion or glade formed of graſs or water, &c. in different places, of ſome conſiderable capaciouſneſs, and ſurrounded by the plantation.

Bosquets of Trees, &c. are a collection of the choicer kinds of trees and ſhrubs arranged in ſeparate detached clumps, or compartments of different regular forms, as circles, ovals, triangles, ſquares, hexagons, octagons, &c. and in the former ſtile of gardening, were commonly, each boſquet ſurrounded with a low hedge, kept in regular order by clipping annually; however, in the modern taſte, boſquets are planted without any ſurrounding hedges, as being more in character, by exhibiting them

them in a more rural or natural order; though either method may be practiſed; and that when incloſed with neat low hedges of a yard or but little more high, and well kept, they will appear very ornamental.

Theſe compartments of plantation may be introduced both in a detached order, in conſiderable lawns, and in parks, paddocks, or any open premiſes, and in any open diviſion of the pleaſure ground, ſo as they may be introduced, detached and diſtinct from other quarters of the plantation, to appear conſpicuous; or ſeveral regular boſquets may be diſpoſed near together, to occupy any particular diſtrict.

In planting the boſquets, place the taller trees and ſhrubs toward the middle, and the loweſt in the front, as obſerved in the general ſhrubbery plantations; or may have diſtinct boſquets wholly of trees, and others entirely of ſhrubs.

And in ſome, the trees may be arranged in ſome regular order in rows, proceeding from a common center in different forms, having walks of graſs, gravel, &c. between.

Where hedges are intended to ſurround any particular boſquet, may have either Beech, Hornbeam, Elm, Maple, Lime, Poplar, Yew, Laurel, Holly, &c.

RANGES of TREES, in ſingle, double, or treble rows, &c. introduced in any capacious ſpace in pleaſure gardens, parks, or any out grounds, effect a noble appearance, and ſhould always be admitted in any tolerably extenſive premiſes; in ſome places have them in a ſingle row, in others two rows together, forming a ſort of walk or avenue, and ſometimes have three or more rows in continuance at equal diſtances.

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In this order of planting, may have any of the tree kind; ſuch as Elm, Plane Tree, Cheſnut, Horſe-Cheſnut, Walnut, Lime, Poplar, Oak, Maples, &c. alſo of the evergreen kinds, may have Pine Tree, Fir, Holly, Evergreen Oaks, &c. having ſometimes ranges compoſed of different ſorts of trees, as above; and in ſome places all of one particular ſort, as ſhall ſeem expedient.

Or ranges of trees of the above ſorts, may be diſpoſed in ſemicircles, ſweeps, interſections, &c. to produce the greater diverſity.

Dotting Trees singly in capacious lawns, parks, or any open ſpaces, have an admirable effect in embelliſhing the premiſes; diſpoſing them as ſingle objects, at conſiderable diſtances, ſo as not to intercept the proſpect, and without any exact order, nor all at the ſame diſtance, but ſometimes two or three ſtanding at moderate diſtances, others placed conſiderably wider.

Any of the tree kinds may be employed in this order of planting, but particularly ſome of thoſe of formal growth, with noble, regular, ſpreading heads; as Horſe-Cheſnut, Spaniſh-Cheſnut, Lime Tree, Walnut, Pine Trees, Firs, Cypreſs, Cedars; alſo may have Elms, Planes, Maples, Oaks, &c. to produce a more extenſive variety.

Permit all the trees to branch out freely around, in their own natural growth.

Groups of Trees, or a collection of ſeveral together in clumps or cluſters, diſpoſed in different parts, in any conſiderable open ſpaces, as lawns, parks, &c. produce a fine appearance; having from three, five, to ten, fifteen, or twenty, or more in a group, thoſe in each group being generally planted at ſufficient diſtances to admit of the heads of the different trees having full ſcope

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to ſpread freely around; and the ſeveral groups to be diſpoſed ſeparately, ſometimes ſingly in different parts, and ſometimes two or three together, at eligible diſtances.

In this method, any ſorts of the tree kind may be introduced, ſometimes different ſorts in the ſame group, other ſmaller groups may be wholly of one ſort; and thus diverſify them in different ways, to increaſe the variety.

HEDGE-ROWS of TREES were more in repute formerly than at preſent, conſiſting of lofty trees, planted in a ſtraight row, hedge-ways, ſo as the head of branches can be trained by clipping with garden ſhears, on both ſides, forming them like a hedge, either quite from the bottom, or firſt trimmed up below to clean ſtems of ſix or eight feet or more, then permitting the branches to ſpread the way of the row, and meet above, and trimmed either arch-ways, or even underneath between the trees, afterwards trained cloſe and ſtraight, hedge-like all the way up, and, in either method, the heads may be trained hedge-faſhion to any height required, from ten or fifteen, to twenty, thirty, or forty feet, or more; having for thoſe very high-trained hedge-rows, either proper machine-ſtages, of ſeveral platforms, for men to ſtand on, or multiplying ſpring-ſhears with a long ſingle handle, ſo contrived as to join in additional lengths occaſionally, according as the clipping advances in height, a line being ſuſpended from the ſpring of the ſhears above through rings in the handle, and by pulling this the ſhears are worked.

The proper trees for this order of planting, are Elm, Beech, Lime, and Maple; and of the evergreen tribe, Yew, Holly, Evergreen Oak, Laurel, Bay, &c. and for which purpoſe of forming high hedge-rows, &c. the above different tree kinds were wont to be planted both in pleaſure

grounds, on the boundary of grand walks, avenues, &c. and frequently on the outſide of the premiſes next road ſides; and in all of which exhibited a very ornamental appearance; but for out-hedge-rows, Elm and Lime Trees are the moſt eligible, but Elm in particular is preferable, as it grows very cloſe and thick, and retains its foliage late in Autumn.

In planting trees in this order, that if intended they ſhall form a tall hedge quite cloſe from the bottom, muſt procure trees, that are well feathered with branches quite from the ground, and of not leſs than five or ſix feet growth, permitting the tops to remain entire to run up to the height required, or if to form hedge-rows, arched or open below the trees, may have clean ſtems, clear of lateral branches, from five or ſix, to eight or ten feet in height; ſo in either method, plant them cloſer or more diſtant in the row, according to the order of training intended.

If to form a tall cloſe hedge full to the bottom, having for this purpoſe trees branching quite to the ground, they may be planted about from three or four, to five or ten feet diſtant in the row, according whether it is deſired they ſhall form almoſt a cloſe range at once, or as ſoon as poſſible, or allow them time to advance to that order of growth by degrees.

Or if intended to have hedge-rows of trees, arched or open below, being furniſhed with trees having clean ſtems freed from lateral branches, five, ſix, or ſeven feet, or more, and ſpreading heads, plant them from five, to ten or fifteen feet aſunder in the row, according as aforeſaid, whether intended they ſhall effect a cloſe range above, as ſoon as poſſible, or to give them time for the branches to extend and meet by degrees, or according whether it is required they ſhall form cloſer or wider arches, to admit of proſpect between.

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In these orders of planting, let the side-branches be encouraged and the fore-right projecting ones cut off, so as to produce a spreading hedge-like form; and when the trees stand wide in the row, the side-branches may at first be trained in the order required, by ranging laths or poles from tree to tree, so fasten the branches to the poles, that they may sooner meet, and form a close hedge-like growth.

They must be cut on the sides every year in Summer, either with garden shears, or occasionally, in very tall works, with a hedge-bill fixed in a long handle; and, if required to have them aspire considerably in height, let the tops run, but when designed to keep the top level at any desired height, they must accordingly be also cut even at top every year when the sides are trimmed.

HEDGES of TREES and SHRUBS were formerly greatly in character in the embellishment of pleasure grounds, but now rarely introduced in modern designs, except principally by way of fences.

However, for purposes of ornament, neat well-kept hedges, in different orders of training, exhibit an agreeable appearance, being in some places made to surround quarters of trees and shrubs in wilderness departments; in others, ranged in a straight line on each side of grand walks, and sometimes were formed into arches, porticos, galleries, arbours, &c. also to form squares and other grand divisions in extensive pleasure grounds; and for which purposes, several sorts of trees and shrubs are employed both of the deciduous and evergreen kinds, such as (of the deciduous tribe) Elm, Lime, Beech, Hornbeam, Privet, Berberry, &c. and of the evergreen Yew, Hollies, Bay Laurel, Tree Box, Lauruſtinus, Evergreen Privet, Junipers, Phillyrea, Alaternus, Sea Purslane, Cypress, Arbor-

vitæ, &c. but Yew and Holly are the moſt prevailing for general hedge-work, for ornament, &c. in pleaſure grounds.

And for fences, ſeveral ſorts of trees and ſhrubs are employed which form very effectual hedges, fencible againſt the inroads of men and beaſts: that of the deciduous kinds, the principal ſorts are, White-Thorn or Hawthorn, Black-Thorn or Sloe Tree, Elm, Elder, and Privet; alſo may occaſionally uſe Hornbeam, Beech, Berberry, Alder, Maple, Hazel, Willow, Poplar, &c. and of the evergreens, Holly is the principal, and occaſionally Yew, Evergreen Privet, and Furze, Gorze or Whins, which makes a very effectual outward hedge fence, and will thrive upon the top of dry banks, &c.

Hedges for outward fences, either to pleaſure grounds, or any other garden departments, are commonly planted either on the ſide or top of a bank, defended on the outſide with a ditch.

That when deſigned to have a fencible hedge planted into the ſide of a bank, it is effected by planting the ſets as they proceed in forming the bank and ditch, the bank being formed ſloping upward in a gradual manner with the excavated earth of the ditch made on the outſide; which muſt be from three to four or five feet wide at top, as it ſhall ſeem neceſſary, narrowing to a foot width at bottom; ſo that the ditch being marked out on the outſide of the intended width, begin to excavate the earth thereof, which if a graſs ſurface, the better for forming the bank, and let the firſt ſpits or ſpades of ſoil as digged out, be laid graſs-ſide downward, regularly along the inner-edge, to effect the firſt formation of the bank; a foot or two high; and on this lay ſome looſe earth a little ſloping backward and higheſt in the front, and then, having a quantity of Hawthorn or Blackthorn ſets, &c. of one, two, or three year's old, and having

having headed them down to a foot, or fifteen, or eighteen inches in length, more or less, according to their size, place them with the roots inward upon the first layer of earth, six inches asunder, leaving the tops some inches out, and then digging more earth out of the ditch, cover the roots and body of the sets facing up the front of the bank, moderately sloping, either with spits of turf, as at first, or earth, as convenient, and after raising it a foot, plant another row of sets as before, earthing them up with the earth from the ditch, finishing by fronting up and raising the bank a foot or two above the second layer of sets, levelling the top of due width to receive the benefit of rains, &c.

When designed to plant on the top of a bank, mark out the ditch, as before, on the outside, dig out the earth, and with which raise the bank sloping, fronting it up neat, regular, and firm, two or three feet high; levelling the top two or three feet width for the reception of the sets or seeds, &c. or where necessary to have internal cross hedge fences in fields or any out grounds, may have a double ditch, *i. e.* one on both sides of the bank, which being first marked out about four or five feet wide at bottom, and the ditch two or three feet width, so digging the ditches, face up the bank with spits of grass sward, if any, if not, with the earth of the ditch, and fill up the middle also with the earth thereof; and thus raise the bank gradually sloping on each side to two or three feet width at top; and then, in either method, proceed to plant one or two rows of sets along the top of the bank, or may sow seed of the sorts intended, as shall be the most conveniently obtained.

That if plants or sets are intended, then, with a spade, cut out a small trench six or eight inches deep, one side cut perpendicular, and in this plant the sets against the upright side six or eight inches distance, and fill in the earth about the roots,

and if a double row is to be planted, let the rows be a foot asunder.

Or if seed instead of plants is intended, let drills be drawn with an hoe an inch deep, in one or two rows, as for the plants or sets, sowing the seed along the bottom of the drill, and earth them over the depth of the drill, observing to keep the ground very clean from weeds all Spring and Summer, as probably some sorts of seeds, such as Haws, Holly berries, &c. may remain till the second Spring before they come up.——See the *propagation of trees by seed.*

But in gardens where internal hedges are required, either for ornament, or fences, or shelter, no ditch or bank is necessary, as in outward hedges, to keep off cattle, &c. so that the place where the hedge is intended, is to be digged about two or three feet width, and either plant sets or sow seed, as before observed; if for plants, cut out a trench, as above directed in planting on the top of a bank, and plant them in the same manner, in one row, which is sufficient for any common internal hedge fence; or if seeds, sow them in the manner just above described.

Hedges thus formed, in any of the foregoing methods, must be kept very free from weeds in their infant growth, otherwise the labour of planting, &c. will be lost, as weeds would choak up the hedge, and render it deficient and irregular.

Begin to train the hedges in their early state, by clipping the sides moderately in Summer once or twice, as shall seem necessary, but do not cut the top much till arrived to nearly the height intended, only just top the irregular growing shoots which run considerably more in height than the rest, or but just moderately top the hedge in general, to cause it to throw out lateral shoots, to thicken below as it advances in height.

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As to the proper height for hedges, those for outward fences planted on the sides or top of a bank, need not exceed three, four, or five feet; so clipping them every Summer or Autumn, both on the sides and top, to the height required, generally cutting them in thinner gradually to the top, which be careful always to cut to an even height without waving, which appears very disagreeable to the sight; but internal hedges for ornament, may be trained from two or three, to six, eight, or ten feet high, or even fifteen or twenty feet, in particular departments; or where any are designed to form any rural architectural devices, as in arches, porticos, galleries, &c. let them be trained accordingly in their early growth.

All hedges should be clipped once every year, where intended to have them continued perfectly close and regular; but all ornamental garden hedges ought to be clipped twice every Summer, to have them compleatly neat, the first cutting to be about or soon after Midsummer; and as they will shoot out strongly again the same year; the second and last clipping must be in the middle or end of August, after they have made their last Summer's shoot; but where hedges are clipped only once a year, it should not be commenced till after the middle of July, or about the beginning of August; as if clipped too early and cut but once, they shooting again the same season, will appear rough all Autumn and Winter; observing in all clipping, to perform it with an even hand, cutting the sides straight and even in every part, without cutting it in waves and hollows, and let the tops of such as are necessary to be kept to a regular height, be also always clipped even with great exactness, agreeable to the sight.

ARBOURS,

ARBOURS, are ſpaces for ſeats incloſed with trees, ſhrubs, and ſhrubby climbers, affording ſhade and ſhelter from the Summer's ſun, &c. having ſeats within for company to ſit upon, defended from the ſcorching heat of Summer, and to enjoy the refreſhing air; and are introduced in ſeveral forms in different parts of pleaſure grounds, as towards any extreme or outward diviſion; alſo on the boundary of a lawn, grand walk, &c. or at termination thereof, and upon ſome eminence, or in any particular departments required.

As to form or figure, an arbour may either be circular, ſquare, hexagonal, octagonal, &c. and may be performed different ways, ſuch as rural arbours of ſurrounding trees and ſhrubs, aſſuming their natural growth; arbours of climbing ſhrubby plants, ſupported upon frame-work on every ſide, and arched over the top; and formal arbours of trees, &c. regularly planted and trained hedge-ways on every ſide, and vaulted over head.

Rural arbours, have trees and ſhrubs of various ſorts, diſpoſed in a natural order, the taller growths placed inward, and the lower ones planted in a gradual order of height outward to the loweſt on the outſide, ſo as the arbour may ſeem to ſtand in the midſt of a clump of plantation, which may be of ſmaller or larger extent, as required, and all the trees and ſhrubs permitted to aſſume their natural growth.

Arbours of climbing ſhrubby plants, having open frame-work, or trellis of laths and poles, erected the width the arbour is intended, and carried arch-ways over the top, and on which the climbers are trained, as they could not be reduced to any other without ſuch ſupport; and may conſiſt of ſeveral ſorts of climbing ſhrubs, as Honeyſuckle, Virgin's-bower, Paſſion-flower, Jaſmines, Woody-Nightſhade, Smilax, Grape, Vine, &c. introducing

troducing alſo ſome herbaceous climbers, as Hops, Everlaſting Pea, Scarlet-beans, Gourds, &c. training the whole upon the ſides of the trellis, and over the arch at top, ſo as the arbour may be wholly ſhaded.

Formal arbours are effected with the upright and moſt branchy tree and ſhrub kinds, planted cloſely in a ſingle range hedge-faſhion, and trained alſo in the manner of an hedge, being permitted to branch out quite from the bottom, and the top carried up and turned arch-ways, or vaulted over-head, by firſt training to a frame-work in that part; forming open arches below on every ſide, to admit of proſpect and the free air; and in the formation of which, may employ either deciduous or evergreen trees, &c. ſuch as (of the deciduous kinds) Elm, Beech, Lime, Hornbeam, Privet, &c. and of evergreens, Yew, Bay, Lauruſtinus, Holly, Alaternus, Phillyrea, Cypreſs, &c. but Yew is the moſt eaſily trained in the order required.

LABYRINTHS, or Mazes, are diviſions of plantation formed into hedge-work and walks, wholly of various intricate windings and turnings, leading to one common internal center and back again, ſo contrived as to render it difficult to follow the right tract which leads to the central ſpace, that ſtrangers are often ſo bewildered as they can neither find the way to the internal center, nor out again the way they entered; and often affords great amuſement.

This diviſion is formed of cloſe hedge-work, arranged in the order above deſcribed, with gravel walks between all the hedges, which may be of Hornbeam, Beech, Elm, Privet, &c. or ſometimes mazes are formed in the parterre manner, with edgings of Dwarf Box, and intervening narrow alleys and borders.

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In either method, the whole ſhould be very neatly kept, the hedges and edgings muſt be clipped annually once or twice in Summer or Autumn; and the walks kept clear of weeds, and frequently rolled.

The rule in walking in theſe departments, by thoſe who are to find out the center, is, they muſt follow the windings of the walks or alleys, not to croſs through the hedges, edgings, or borders, &c.

ROOKERIES, are plantations of the loftieſt trees, as Elm, Beech, &c. planted either by way of a thicket, grove, or avenue, ſometimes in an outward part of the pleaſure ground, parks, &c. or ſome adjacent out premiſes; deſignedly ſometimes to afford harbour for rooks to build, breed, and frequent, where it is required to indulge thoſe kind of birds about eſtates in plantations, as above.

TEMPLES, or ornamental light buildings ſo called, are often introduced in pleaſure grounds, either in ſome centrical open ſpace, or at the termination of ſome grand walk or avenue of trees; or on ſome elevation, or by the ſide of ſome ornamental piece of water; which kind of ſtructure ſhould generally be adorned with ſome plantation of ornamental evergreen trees of formal growth, ſuch as Cedar, Cypreſs, Arbor-vitæ, Pines, Firs, &c. alſo with ſome ſtandard Laurels, Arbutus, &c.

GROTTOS, are a ſort of caves arched over and formed internally with rock and ſhell-work, ſpar, &c. diſpoſed in a natural order, and generally conſtructed near the ſides of waters, or any retired ſituation, and ornamented by ſome plantation of trees and ſhrubs; and often ſo contrived as to appear formed in the ſide of ſome ſteep aclivity, either natural or artificial; the top being ſometimes covered over with

rock-

rock-work, &c. and with several sorts of shrubby plants introduced thereon at sides and top, and some aquatic trees, as Weeping-Willow, &c. stationed near the entrance.

ROCK-WORK is often introduced artificially in parts of pleasure grounds, where any wild scenes are thought in character, agreeable to the situation, and in which is introduced various sorts of rock plants, both of the shrubby and herbaceous tribe, in such order as to produce a very agreeable diversity.

RUINS of buildings, artificially formed, are sometimes introduced in pleasure ground designs; such as broken bridges, decayed temples, and such like, in some remote and retired situation; and on which is introduced several sorts of woody plants, as Ivy, &c. which naturally grow on or ascend upon buildings and ruins; and with Weeping-Willows, &c. growing in the ground near.

HERMITAGES, are solitary, humble buildings, constructed in some obscure or lonesome part of pleasure grounds, and formed either of the roots of trees, rustic stone, or rock-work, &c. arched over at top, and generally with an arched entrance of irregular form; having one or more internal apartments, and is commonly either contrived on the side of some rising ground or eminence, or so artificially formed by covering it at top with mould and grass, as to form a sort of grass knowl, &c. with a private entrance in one side; having generally a private way leading thereto, formed by a moderate plantation of trees and shrubs, and with some shrubs also planted at top of the hermitage, if earthed and grassed over, &c. as above.

WATER

WATER in pleasure grounds, contributes exceedingly to their merit and ornament; and is introduced in various forms and dimensions, according to the situation and extent of the premises, such as in circular basons, oblong canals, irregular basons, and canals, &c. in various sweeps and curves, and in serpentine rivers, winding in easy turnings between divisions of plantations; having, however, the sides of such waters generally ornamented with some plantation at some moderate distance, and with some of the aquatic tribe; especially Weeping-Willows dotted here and there near the verge of the water, in which their pendulous branches suspended over it, will effect a characteristic appearance.

That in low situations, where there is either natural streams of water running through the premises, or so situated as to be conveniently collected and conducted therein, it will be easy to form a piece of water of proportionable dimensions; but in high grounds, or where water is not near, it will be attended with considerable trouble and expence to form eligible spaces of water either in basons or otherwise, so should be rarely attempted of any considerable dimensions.

As to extent, may have basons or other pieces of water, of from ten, twenty, or thirty feet diameter, to as many acres, or more, agreeable to the extent and situation of the premises, or according whether there is but a moderate or plentiful supply of water; and in depth may be from two or three, to five or ten feet, though unless where there is already a natural hollowness of several feet depth, the excavation of the earth to form deep water would be attended with a very great expence, besides a moderate depth, of from three to four or five feet is more eligible than if deeper; and should generally be sloping gradually from every side to the middle, and the surface of the ground on each side of the water should be worked off in a gradual sloping manner, as to form a very

a very eaſy, and where poſſible, an almoſt imperceptible deſcent to the water's edge, and ſo as the whole ſurface of water may appear conſpicuous at ſome diſtance.

In ſome ſituations the ſoils being naturally of a ſtrong clayey bottom, will eaſily retain the water in the baſons, canals, or other compartments intended, or ſometimes, where there is a perpetual running ſtream furniſhing a conſtant ſupply, the water may alſo be kept to a conſtant ſtandard without any great previous preparation of the bottom by artificial claying; but, in default of theſe conveniences, the baſon or other compartment deſigned for water, muſt as ſoon as the cavity is formed of proper width and depth, be wholly clayed with the ſtrongeſt tough clay that can be obtained, laid not leſs than eight or ten inches, but twelve or fifteen inches thick will be more effectual, eſpecially if a naturally light looſe bottom, and the clay ſhould be remarkably well trodden and rammed down with the greateſt care, to cloſe it well in every part, leaving no cranny or crevice by which the water can eſcape, otherwiſe the whole labour would be loſt; and in extenſive ſpaces, where there is a ſtrong and deep body of water, and that there is a lower ſituation beyond the boundary at either end, or on the ſides, the head, or boundary, muſt be well ſecured to ſupport the weight of the water, by thick ramparts of earth and clay, and ſometimes alſo faced with a wall of brick or ſtone next the water; and in all of which, be careful that the adjoining ſurface of the ground on either ſide, along the verge of the ſtandard height for the water, be completely levelled correſpondent with the ſaid water's level; and working it off in a regular order agreeable with the adjacent ground, as it admits, either level, or gradually ſloping from the water, either way, correſponding with the general ſurface,

 which

which ſhould be afterwards laid or ſowed with graſs quite to the edge of the water, as before intimated.

After having prepared by well claying the bottom and ſides of the cavity of the baſon, &c. quite from the middle to the edge on every ſide of an eligible thickneſs, it is of importance to cover the clay over with clean gravel, half a foot thick, to prevent the muddineſs riſing from the clay to foul and thicken the water, which, by this precaution, will always appear clear to the bottom; and let the ground on every ſide be laid down in graſs, quite from the water's edge outward, correſponding with the adjacent ground, as aforeſaid.

That when any ſpace is thus completed for the reception of the water, it ſhould be let in as ſoon and expeditious as poſſible, till advanced to the ſtandard of height required; having generally, in a convenient part, an under-ground private drain near the ſurface, to carry off the waſte water when there is a redundancy, that it may not overflow the adjoining ground.

The adjacent ground on the boundary of any compartments of water, ſhould be ornamented with ſome plantation of trees, &c. in clumps, or in ſuch order, at proper diſtances, as to admit of a full proſpect of water between them; but not planted too near the edge, leſt the roots penetrate through the clay, and render it porous for the water to run away.

Cascades of Water are formed by a large body of water of a river, or heads of water deſcending rapidly down any ſudden declivity, from a higher to a lower ſituation, either formed by nature or art, having ſometimes a quantity of large rough ſtones diſpoſed irregularly in the declivity of the fall, to produce broken water, and increaſe the ſound

ſound or noiſe of the fall, and have a very agreeable effect in particular diviſions in large pleaſure grounds or parks, or any out premiſes where there is a proper current and force of water to produce the proper effect; planting ſome Weeping-Willows on either ſide of the fall of water, ſo as the branches may hang over in their pendulous order.

FOUNTAINS of WATER, being ſuch as ſpout the water a conſiderable height in a continued ſtream, are often formed in ſmall baſons in gardens, by having a pipe in the center, proceeding from the mouth or hand, &c. of ſome image, or from the mouth of a ſwan, dolphin, or other aquatic figure, and being ſupp ied with water conducted by a pipe from ſome upper reſervoir, ſeveral feet above the level of the baſon, the fountain plays the water in a ſtream a proportionable height in the air, appearing agreeably cooling and refreſhing in Summer, having the adjacent ground on either ſide, at ſome moderate diſtance, adorned with clumps of plantations of ſhrubs and trees, to produce a more rural effect in contraſt with the playing fountain.

Thus, in the various departments of pleaſure grounds, plantations of trees and ſhrubs ſhould always be introduced, more or leſs, in the different diviſions, proportionable to the extent of the premiſes, both for ornament, variety, and obſervation, and occaſionally, in particular parts, for ſhade, ſhelter, hedge-fences, blinds, &c. as a pleaſure ground without being properly diverſified with plantation in ſome tolerable variety of different ſorts in the ſeveral diſtricts, will appear naked and defective, if ever ſo well deſigned in other reſpects; but with an eligible collection of trees and ſhrubs, diſpoſed in various orders of planting, agreeable to the foregoing hints of the different departments, they may be ſo varied in numerous ways, as to

effect a vast diversity of rural embellishments and grand and elegant designs, as well as afford a great source of variety in the different sorts of trees, &c. in the several compartments of plantations.

As many of the shrub tribe produce very beautiful flowers, curious persons are desirous of having them blow in the most early period by the aid of artificial heat, in hot-houses, forcing-frames, &c. and by which, having the plants for this purpose in pots, for moving into these departments in December, January, and February, may obtain a fine bloom one, two, or three months before their natural season, and continued in succession till that time.

By this practice, having the convenience of a hot-house, &c. may obtain an early blow of Roses, Syringas, Hypericums, Persian-lilacs, Common Lilacs, Guelder-rose, Honeysuckles, and several other desirable flowering shrubs.

That having the shrubs for this purpose planted in pots in the Spring or Autumn before, to be well rooted, may begin to place some roses in any pine-apple stove or forcing-house, at work, in the end of December, or in January, but towards the end of January and beginning of February, may introduce a larger successional supply both of roses and other flowering shrubs intended; giving frequent waterings.

ARRANGEMENT

OF THE

FOREST TREES

FOR

TIMBER AND UNDERWOOD PLANTATIONS,

AND THEIR

GENERAL CULTURE.

HARDY Plantations of forest trees, both for pleasure, and in woods and forests, prove not only beneficial in the improvement of estates, but are also a considerable ornament, effect an air of grandeur both to the premises and adjacent country, as we formerly observed, as well as often prove a public convenience to the neighbourhood in furnishing materials in various purposes of building, husbandry implements, &c. and the loppings furnish fuel for firing: so that possessors of land will reap considerable advantage and pleasure in dedicating a proportionable extent to plantations of forest trees, some to stand for timber, others as underwood plantations, to fell every seven, eight, or ten years, for poles, &c. for innumerable useful purposes; having also on the same ground, a suffi-

ciency of the handſomeſt trees to remain for full ſtandards, to be thinned out gradually to proper diſtance, to continue to full growth, till arrived to large timber for building and other ſtrong purpoſes; ſo that the underwood being an early and continual profit, and the timber advancing to a future period, gives an air of fertility and riches, and will prove a conſiderable emolument, the whole ſufficient to compenſate amply for the ground occupied, and the labour in rearing and planting.

And as there is hardly any ſituation and ſoil ſo untractable, but what will rear a growth of foreſt trees of ſome ſort or other; and none of our common foreſt trees but what may be eaſily raiſed either from ſeed, ſuckers, layers, or cuttings, in the open ground, and will almoſt all ſucceed in any expoſure, is encouragement for every one having any tolerable extent of land, to appropriate a ſhare for foreſt tree plantations, more or leſs.

Likewiſe, as in the compaſs of moſt eſtates, there may be various ſituations, ſoils, and expoſures, in many parts unfavourable for the growth of other vegetables, yet may have proſperous plantations of foreſt trees, adapted to the different ſituations, which in ſome parts may be probably low and flat, others high, ſome hilly and mountainous, with ſteep declivities; others boggy, marſhy, or watery; ſome ſoils light and ſandy, or gravelly, and ſome loamy, clayey, &c. and of all aſpects, and in many places improper for the growth of graſs or corn, it will be eaſy in the collection of foreſt trees to ſuit all theſe different ſoils and ſituations to particular advantage; and any very poor land, or waſte ground, may be improved by ſuch plantations; as in all boggy and watery ſituations, may have profitable plantations of aquatics, ſuch as Alder, Willow, Poplar, and others; and in the drier, upper, and higher grounds, have any of the other foreſt tree kinds.

Foreſt

Foreſt trees, are ſuch as grow from twenty or thirty, to fifty or an hundred feet high; conſiſting both of the evergreen and deciduous tribe, as exhibited in the following arrangement of the different ſpecies.

ARBOR VITÆ, or Tree of Life——*Thuja*——Common American Arbor Vitæ—China Arbor Vitæ. Both raiſed from ſeeds in Spring, in a border or in pots of light earth, ſowed half an inch deep; and by layers and cuttings in Autumn, &c. (Evergreen.)

ALDER TREE—*Betula Alnus*——Round-leaved Alder—Long-leaved American Alder—Hoary-leaved Alder—White Alder. Raiſed by ſeed, layers, and cuttings, in Autumn or Spring. (Deciduous.)

ASH TREE—*Fraxinus*—Common Engliſh Aſh—American Aſh—Black American Aſh—White American Aſh—Red American Aſh. All raiſed by ſeed, called Aſh keys, ſowed in Autumn. (Deciduous.)

BAY TREE—*Laurus nobilis*—Common Bay Tree. Raiſed by ſeed, ſuckers, and layers in Autumn. (Evergreen.)

BEECH TREE—*Fagus ſylvaticus*—Common Beech Tree. Raiſed by ſeed in Autumn. (Deciduous.)

BIRCH

BIRCH TREE—*Betula*—Common White Birch Black Virginia Birch—Poplar-leaved Virginia Birch—Canada Birch. Raised by seeds and layers in Autumn. (Deciduous.)

BOX TREE—*Buxus arborescens*—Common Tree Box—Broad-leaved—Narrow-leaved. Raised by layers, cuttings, and seed in Autumn. (Evergreen.)

CEDAR of LIBANUS—*Pinus Cedrus*—Common Cedar of Lebanon. Raised by seed in the Spring, in beds or pots of light rich earth, sowed half an inch deep. (Evergreen.)

CEDAR of VIRGINIA—*Juniperus virginiana*—Red Virginian Cedar. Raised by seed, in Autumn or Spring, in light earth, sowed half an inch deep. (Evergreen.)

CHERRY TREE—*Prunus-Cerasus avium*—Wild Black Cherry—*Prunus Padus*, or Bird Cherry. Raised from the stones of the fruit in Autumn, sowed an inch deep. (Deciduous.)

CHESNUT TREE—*Fagus Castanea*—Common Spanish Chesnut. Raised from the nuts, in Spring, in beds of common earth, sowed two inches deep. (Deciduous.)

CORK TREE—*Quercus Suber*—Common Cork Tree. Raised by the acorns sowed in Autumn. (Evergreen.)

CORNEL TREE, or Cornelian Cherry—*Cornus Mas*, or Male Cornel Tree. Raised by seed, suckers, layers, and cuttings. (Deciduous.)

CYPRESS,

CYPRESS TREE—*Cupressus*—Upright, and Horizontal Evergreen Cypress.—Deciduous Cypress. Raised by seed principally; and sometimes by layers and cuttings. (Evergreen and deciduous.)

ELM TREE—*Ulmus campestris*—English Elm—Narrow-leaved Cornish Elm—Broad Rough-leaved Wych Elm—Smooth-leaved Wych Elm—Dutch Rough-barked Elm, with very broad rough leaves—Narrow-leaved Dutch Elm—American Elm. Propagated mostly by suckers and layers, abundantly in Autumn, &c. or occasionally by grafting any particular sorts, and by seed. (Deciduous.)

ELDER TREE—*Sambucus nigra*—Common Black-berried Elder—White-berried Elder. Raised from cuttings and berries, sowed in Autumn, &c. an inch deep. (Deciduous.)

FIR TREE—*Pinus Abies*—Norway Spruce Fir—Silver Fir—Canada Spruce Fir, consisting of the White, Black, and Red kinds. Raised all by seed only, sowed in the Spring half an inch deep in beds of light earth. (Evergreen.)

HAZEL-NUT TREE—*Corylus Avellana*—Common Hazel-Nut Tree. Raised chiefly from the nuts in Autumn or Spring; or by suckers and layers. (Deciduous.)

HOLLY TREE—*Ilex Aquifolium*—Common Green Holly. Propagated by seed sowed in Autumn, an inch deep, which often remains till the second year before they come up. (Evergreen.)

HORN-

HORNBEAM TREE—*Carpinus Betulus*—Common Hornbeam—Virginia Long-leaved Hornbeam—Virginia Flowering Hornbeam. Raised by seed and layers in Autumn, sowing the seed an inch and half deep. (Deciduous.)

HORSE CHESNUT—*Æsculus Hippo-castanum*—Common Horse Chesnut. Raised always from the nuts, in Autumn or Spring, planted in drills two inches deep. (Deciduous.)

LABURNUM—*Cytisus-Laburnum*—Broad-leaved Laburnum—Narrow-leaved. Raised generally by seed, in the Spring, sowed an inch deep, or occasionally by layers and cuttings. (Deciduous.)

LARCH TREE—*Pinus Larix*—Common Red Larch Tree—Black American Larch Tree—Horizontal Larch. Raised always from the seed of the cones, sowed half an inch deep in light earth, in March. (Deciduous.)

LAUREL TREE—*Prunus Lauro-cerasus*—Common Laurel Tree. Raised plenteously by cuttings early in Autumn; also by layers and seed. (Evergreen.)

LIME TREE—*Tilia*—Common Lime Tree—Red-twigged Lime Tree—American Lime Tree. Propagated by layers, cuttings, and suckers; and occasionlly by seed in Autumn.

MAPLE TREE—*Acer*—Common Smaller Maple—Greater Maple, or Sycamore Tree—Norway Maple—Ash-leaved Virginia Maple—Plane-tree-leaved Norway Maple—Sugar American Maple—Pensyl-

Pensylvanian Maple. Propagated plenteously by seed, layers, and cuttings in Autumn or Spring. (Deciduous.)

MOUNTAIN-ASH—*Sorbus Acuparia*—Common Mountain Ash. Raised by seed sowed an inch deep in Autumn. (Deciduous.)

NETTLE TREE—*Celtis*—Black-fruited European Nettle Tree——Purple-fruited American Nettle Tree. Propagated by seed chiefly, in a warm border, in Autumn or Spring, in light earth, sowed an inch deep; and by layers and cuttings. (Deciduous.)

OAK TREE—*Quercus*—Common English Oak—Chesnut-leaved American Oak—Willow-leaved American Oak—White Virginia Oak—Red Virginia Oak—Black Virginia Oak—Prickly-cupped Spanish Oak. Raised from the acorns, sowed in Autumn or early in Spring, two inches deep. (Deciduous.)

OAK, the Evergreen——*Quercus Ilex*——Common Evergreen Oak—American Live Oak. Propagated by the acorns, as the deciduous oaks. (Evergreen.)

PEAR TREE——*Pyrus communis*——Common Pear Tree. Raised for this purpose from seed of any sort of pear, sowed in Autumn. (Deciduous.)

PINE TREE—*Pinus*—Pinaster, or Broad-leaved Wild Pine—Scotch, or Small-leaved Wild Pine, called Scotch Fir—Pinea, or Stone Pine—New-England, or Weymouth Pine—Virginia Swamp Pine.

Pine. All raiſed from ſeed ſowed in light earth, half an inch deep, in March. (Evergreen.)

The pine is diſtinguiſhed from the firs in producing their leaves by two, three, or five together.

PLANE TREE—*Platanus*—Occidental, or Weſtern Plane of America—Spaniſh, or Middle Plane—Maple-leaved Plane. Raiſed by ſeed, ſowed in Autumn or Spring, half an inch deep; and by layers and cuttings. (Deciduous.)

PLUM TREE—*Prunus domeſtica*—Common Plum Tree. Propagated as a timber tree, by ſowing the ſtones of any ſort of plum, in Autumn, an inch or two deep, and by ſuckers.

POPLAR TREE—*Populus*—White Poplar, or Abele Tree—Lombardy Poplar—Black Poplar—Trembling Poplar, or Aſpen Tree—American Balſamic Poplar—Tacamahacca, or Smaller Balſamic Poplar—Virginia Variable-leaved Poplar. All eaſily raiſed in abundance, by cuttings, layers, and ſuckers in Autumn, &c. or occaſionally by ſeed. (Deciduous.)

SALLOW TREE——See *Willow*.

SERVICE TREE—*Sorbus domeſtica*—Cultivated, or Eatable-fruited Service Tree. Raiſed from ſeed, ſowed in Autumn, in a dry warm border, or in pots an inch deep. (Deciduous.)

SERVICE, WILD——*Cratægus*——Maple-leaved Wild Service Tree,—White Beam, or White-leaf Tree. Raiſed moſtly by ſeed, in Autumn, &c. in light earth, an inch deep, they often lie

lie in the ground till the ſecond Spring; alſo by layers and cuttings. (Deciduous.)

WALNUT TREE—*Juglans*—Common Walnut Tree—Black Virginia Walnut Tree—White Virginia Walnut, or Hickery Nut Tree—Shag-barked Hickery Nut Tree. All propagated by the nuts, planted in Autumn, or preſerved in ſand till February, and planted two inches deep. (Deciduous.)

WILLOW TREE—*Salix*—Common White Willow—Red Willow—Almond-leaved Willow—Shining Willow—Norfolk Purple Willow—Brown Willow—Crack, or Brittle Willow—Babylonian, or Weeping Willow—Glaucous-leaved Tough Willow—Pentandrious Sweet Willow—Netted Round-leaved Willow—Woolly Lapland Willow—Triandrious White-barked Willow—Sallow Tree, or Oval Rough-leaved Willow—Dwarf Yellow Oſier Willow. All propagated freely by cuttings, both of the young ſhoots, a foot or two long, in moiſt ground; or large truncheons, or poles, in Autumn, Winter, or Spring. (Deciduous.)

TULIP TREE—*Liriodendron Tulipifera*—Common American Tulip Tree. Raiſed by ſeed, ſowed half an inch deep in a bed of light earth, in the Spring. (Deciduous.)

YEW TREE—*Taxus baccata*—Common Berry-bearing Yew Tree. Raiſed from ſeed, ſowing the berries whole, in Autumn, in light earth, half an inch deep. (Evergreen.)

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TULIP TREE—*Liriodendron Tulipifera*—Common American Tulip Tree. Raiſed by ſeed, ſowed half an inch deep in a bed of light earth, in the Spring. (Deciduous.)

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In raiſing the different foreſt trees, either by ſeed, ſuckers, layers, or cuttings, nearly the ſame methods, in many reſpects, are to be obſerved as for thoſe of the pleaſure ground; but take the following general directions of the different methods.

By ſeed, conſiſting of ſmall ſeeds, kernels, maſt, acorns, nuts, ſtones, berries, &c. moſt of which may be ſowed in Autumn, in October or November, and ſome principally in the Spring, in February and March, as mentioned under their reſpective heads; obſerving, in the nut, ſtone, and berry kinds, when not ſowed till Spring, ſhould generally be preſerved till then in dry ſand: and as to the mode of ſowing. it ſhould be in three or four feet wide beds of light earth, either promiſcuouſly on the ſurface, and covered from half an inch to two or three deep with earth, according to the ſize of the ſeed, or in drills the ſame depth, the ſmaller ſeeds covered ſhalloweſt, and the larger ſorts have the covering of earth deeper in proportion; obſerving, if by ſowing in beds on the ſurface, previouſly with the rake or ſpade, trim from about half an inch to one, two, or three inches depth of earth evenly off the ſurface into the alley in a ridge, then ſow the ſeed, and ſmooth it evenly into the earth with the back of the ſpade, and directly cover it a proper depth with the earth, from the alley; and by ſowing in drills, draw the drills with an hoe, a proportionable depth, as above, ſow the ſeeds along the bottom, and cover them in with the earth.

In moſt ſorts, the ſeeds will come up the following April and May; and ſome of the hard bony-ſeeded kinds, ſuch as Holly, Wild Service, &c. will remain in the ground till the ſecond Spring; obſerving to keep the ſeed-beds clean weeded: and when the plants are one or two years old, they ſhould be planted out in the nurſery, digging them up carefully out of the ſeed-bed, and ſhorten the perpendicular

dicular tap-root and any lower lateral ſhoots of the ſtem, but preſerve the top entire, then plant them in rows, ſome of the ſmaller kinds in beds, in rows from ſix to twelve inches aſunder for the preſent; and the large plants in nurſery rows, two or three feet aſunder by one or two feet in the row; the ſmall plants with ſlender roots, may be dibbled in, or, as well as the larger plants, may have ſmall trenches cut out with the ſpade along the line, ſix or eight inches deep, ſo place the plants with the roots in the trench, and trim in the earth, and tread it gently to fix the roots and the plants upright; or in planting out the ſeedlings, may put in the common kinds by ſlit-planting with the ſpade, ſtriking it down parallel with the line, then make a croſs cut, and directly introduce the plant, bringing it cloſe up to the line, and tread the earth cloſe to the root; and thus in one or other of theſe methods, proceed till the whole is planted.

Being thus planted in the nurſery, keep them clean from weeds by hoeing the ground between the rows in Summer and in Winter digged one ſpade deep, turning all weeds to the bottom; and keep the trees to clean ſingle ſtems, by pruning off ſtrong lateral ſhoots and let the tops aſpire in height.

When the trees are from three or four, to ſix or ſeven feet high, they are of proper ſize for final tranſplantation where they are to remain.

By ſuckers, ſeveral ſorts produce many ſuckers from the root, ſuch as Elm, Lime, Poplar, Hazel, Pear, Plum, &c. growing one, two, or three feet long in one Summer's ſhoot, digging them up in Autumn, &c. following, with roots, and plant them in nurſery rows, two or three feet diſtance by one in the row, as for the ſeedlings; managing them in the ſame manner.

By layers, this is performed with the young ſhoots, and for which purpoſe, ſhould have ſome young trees of the reſpective ſorts planted for ſtools, and when two or three inches thick, or more, in the ſtem, then headed down near the bottom to furniſh a ſupply of ſhoots near the earth, properly ſituated for laying, which when one or two years old, lay them in Autumn; digging the earth around the ſtools, and proceed to peg down all the ſhoots into the earth, obſerving, thoſe of the hard wooded kinds ſhould be tongued or ſlit half an inch, or an inch, or more, in the under ſide, ſo laying each regularly in the earth, three or four inches deep, peg them down with hooked ſticks, and cover the body of the ſhoots the proper depth with earth, leaving the tops out from about three to four, five, or ſix inches, or more, in length, or headed to an eye or two, that they may make a ſtrong ſhoot for a leader.

They will moſtly be rooted in one Summer, and ſhoot at top; then, in Autumn, about October or November, &c. cut them from the parent, and plant them in nurſery rows, as for the ſeedling and ſucker plants.

By cuttings, chuſe principally young ſhoots of one Summer's growth, which cut off in Autumn, at the fall of the leaf, or in Winter or Spring in open weather, in lengths, from ten or twelve, to eighteen inches long, trimming off any lateral twigs; and ſhorten week, crooked, or ſtraggling tops, but leave the robuſt ones at full length, and plant them by dibble, in a moiſt ſituation, and ſome in ſhady borders, in rows a foot aſunder; they will root and make ſhoots at top the firſt Summer, obſerving to train each to a ſingle upright ſhoot for a ſtem, with the top entire, as for the ſeedlings, &c.

But in ſome ſorts, large cuttings, truncheons, or poles, one, two, or three yards long, will grow, ſuch as Willow, Poplar, Alder, &c. planted in moiſt

moiſt or watery ſoils, at once to remain, where required to raiſe them to a large ſize as ſoon as poſſible, planting them one third into the ground.

When the young trees raiſed by any of theſe methods in the nurſery for tranſplanting, are from three or four, to ſix or eight feet high, they ſhould be planted out finally, but the younger the better, in Autumn or Winter, &c. in open weather; allotting the low, marſhy, boggy, and watery ſituations for the aquatic tribe, ſuch as Alders, Poplars, Willows, Sallow, Oſiers, Birch, &c. which will proſper in places in a manner almoſt covered with water, and yield conſiderable profits both as underwood, pollards, and timber; allowing all the other ſorts, the drier or more upland places, or any where out of water, and high or hilly grounds, declivities, &c. though the aquatic kinds may alſo be planted in any upland or dry grounds, where required, for they will thrive in any common ſoil and ſituation: obſerving, in the diſtribution of the trees, to allot the evergreen and deciduous kinds principally ſeparate plantations.

The ground intended for plantations, ſhould be fenced either with ditches, hedges, palings, &c. againſt the inroads of cattle.

In proceeding to the planting, let the trees be digged up in the nurſery with as good a ſpread of roots as poſſible, cut off any perpendicular or tap-root, and broken parts, leaving the reſt entire, prune off alſo any ſtrong lateral ſhoots of the ſtem, retaining the top whole, and plant them any where intended, ſome either in wide rows, ten, or fifteen, or twenty feet aſunder, though if planted only half the diſtance, the trees will thereby draw up one another ſtraight and more expeditiouſly in growth; or may plant them generally in cloſe rows, only four or five feet aſunder, by two, three, or four feet in

the row, in order thus to admit of ſeveral thinnings by degrees, as underwood, after the firſt ſeven or eight years growth, and every ſeven, eight, or ten years afterwards, each time leaving the moſt thriving plants to grow up to ſtandards; performing the planting by opening apertures in the earth with a ſpade, not too deep, placing the trees with their upper roots only from about three or four to five or ſix inches below the ſurface, covering them in evenly with the earth finely broken, and then tread it gently about the roots to fix the plant firmly and upright.

By making plantations of foreſt trees while young, of three, or four, or not above ſix or ſeven feet high, they more freely eſtabliſh their roots, and in the end, make more thriving plantations than larger trees; for which reaſon, ſome either raiſe the trees at once in the ſame ground where they are always to ſtand, not to be checked by removal, or plant them out quite young from the nurſery, when only two or three feet high; each method as below.

Sometimes, in forming conſiderable plantations of ſuch trees particularly as are commonly raiſed from ſeed, it is effected by ſowing the ſeed at once where the trees are to remain, the ground being prepared by ploughing or digging, &c. then draw drills three or four feet aſunder, and the ſeed ſowed pretty cloſe in the drills, to allow of a plentiful thinning of underwood and poles, &c. Alſo ſometimes, to ſave trouble in forming large plantations, the plants are juſt raiſed in the nurſery, and permitted to grow one or two feet high in the ſeed-bed, thence planted out at once, the ground being prepared, plant them either by digging holes, or, if very ſmall-rooted plants, by making a ſlit or crevice in the earth with the ſpade, for each plant, if great expedition is requiſite; or ſometimes, for cloſe planting, a trench is cut out the whole length of each row, one perſon depoſiting the roots of the plants in the trench, while another trims in the earth.

Let

Let the ſeveral plantations of new-planted foreſt trees in their younger growth, be examined from time to time, in order both to ſet upright ſuch as have been diſplaced by impetuous winds, &c. and to clear them from all rampant weeds, which would ſoon over-top the ſmall plants.

In their advanced growth, thoſe which were planted or ſowed thick, deſigned as underwood, for frequent cutting, in the order of thinning, for poles or faggot-wood for firing, &c. will be ready for the firſt fall, in ſeven, eight, or ten years, when beginning at one end of the plantation, cut down an eligible portion, leaving the moſt thriving plants at moderate diſtances, to grow larger, and ſome for timber; and next year, advancing farther in the plantation, cut another quantity of underwood, preſerving the ſtrongeſt as before, to grow up; and ſo proceed with a cutting annually till got quite through the plantation, always leaving plenty of the moſt proſperous trees at regular diſtances, to be afterwards gradually thinned; and by that time the laſt fall of underwood is performed, the remaining ſtools of the firſt will, in many of the deciduous ſorts particularly, have ſhoot up again in their turn, and be fit to cut again in the foregoing progreſſive order, for various ſtronger purpoſes, ſtill leaving the beſt to grow to full ſize for timber; which in ſome ſorts will be fit in thirty or forty years, others double that time, and ſome an hundred years or more; and ſuch as the Oak, a very ſlow grower, require a much longer time to obtain its full growth.

The trees left for larger purpoſes, and for timber, will advance out of the way of the underwood, and which, as they increaſe conſiderably in growth, ſhould alſo, where they grow cloſe, be thinned in ſome regular order, leaving them at laſt, from fifteen to twenty feet or more aſunder.

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ARRANGEMENT

OF

HERBACEOUS, PERENNIAL AND BIENNIAL, FIBROUS AND FLESHY-ROOTED, FLOWERING AND ORNAMENTAL

PLANTS,

FOR ADORNING THE

PLEASURE GROUND.

UNDER this arrangement is comprised all the principal herbaceous, fibrous-rooted perennials and biennials of the flowery ornamental tribe, for decorating the pleasure ground and flower garden, and for variety and curiosity; are denominated herbaceous, as being of an herb-like nature, in not having woody or durable stalks, but such, for the general part, whose stalks are renewed annually, comprehending very considerably more of the perennial than biennial kinds; all hardy plants that will succeed in any of the common borders, and other compartments in the pleasure ground, &c. and shrubbery clumps; and being of various habits, structure, and magnitude of growth, from three or four inches, to six or eight feet high, exhibiting a vast diversity in their different growths, foliage, and flowers, and in

in their times of flowering, affording a conſtant ſucceſſion of bloom in the different ſorts, from January or February till November; the perennials remaining many years by the root, producing flowers annually, but the biennials flower only once in good perfection, as explained below.

The perennials are fifty to one the moſt numerous, have abiding or perennial roots, of many years duration, ſending up flower-ſtalks every Spring, all flowering the ſame year, ſome in the Spring ſeaſon, others in Summer and Autumn, each at their reſpective ſeaſon, ripen ſeeds, then decay down to the root in Autumn or Winter following; and the roots increaſe into off-ſets, by which moſt of the ſorts may be readily propagated by ſlipping or dividing them in Autumn or Spring, many of them alſo by ſeed, and ſome by ſlips and cuttings of their ſtalks in Summer; each method as hereafter explained.

And the biennials, or two-year plants, are ſuch as riſe from ſeed one year, growing ſtocky and produce only leaves, and next year ſhoot up flower-ſtalks, flower and ripen ſeed, then moſtly die ſtalk and root; ſome muſt be raiſed every year from ſeed.—See the liſt of biennials after the following general arrangement.

But the whole, both perennials and biennials, are exhibited together in the following general arrangement, all the ſpecies in their proper families or genera, according to the botanic characters of their flowers which conſtitute their genus or family; ranging the different genera or families alphabetically, each by its botanic or generical Latin name, with that of the Engliſh, together with the names of the ſpecies; and by this arrangement every plant appears in the family or genus to which it belongs, agreeable to the laws of ſyſtematic botany, by which all plants are claſſed conſiſtent with the reſpective ſtructure of their flowers.

ACANTHUS

ACANTHUS—*Bear's Breech*—*Acanthus*—Common Prickly-leaved—Soft, or Smooth-leaved.

ACHILLEA—Milfoil, or Yarrow—*Achillea*—Common White-flowered—Common, with purple flowers—Hoary Milfoil—Silvery-leaved—Lavender Cotton-leaved—Southernwood-leaved—Noble, or Sweet Milfoil—*Achillea* Ptarmica, or Sneezwort—Double-flowered Sneezwort—Ageratum, or Sweet Maudlin.

ACONITUM—Monk's-Hood, or Wolf's-Bane—Blue-flowered—Yellow Poisonous—Wholesome White-flowered—Variegated Blue—Great Voilet-coloured—Greater Purple—Blue Purple—Pyrenæan Fennel-leaved—Uncinated Blue Philadelphian.

ACORUS—Sweet Rush, or *Calamus aromaticus*.

ACTEA—Herb-Christopher—Spiked-flowered—White-berried—Racemose-flowering.

ADONIS—Perennial Yellow *Adonis*.

ADOXA—Hollow-root, or Tuberous Moschatel.

AGERATUM—Hemp Agrimony—Tall Perennial *Ageratum*.

AGRIMONIA—Agrimony—*Eupatoria*, or Common Pinnated-leaved Agrimony—Three-leaved, or *Agrimonoides*—Sweet-scented.

AGROSTEMA—Rose Campion—Red-flowered—White-flowered—Red and White—Double.

AJUGA, or Bugle—Oriental, or Eastern—Pyramidal—Creeping.

ALCEA

ALCEA—Hollyhock, or Rose-Mallow—Common Rose-coloured—Red-flowered—Black-red—Purple—Yellow—Lemon-coloured—White—Double and Single of each—Fig-leaved.

ALCHEMILLA—Lady's Mantle—Common Lobated-leaved—Hairy-leaved Common—Five-leaved—Alpine Digitated-leaved—Alpine Downy-leaved.

ALETRIS—*Aletris*—Farinose American—Hyacinth-flowered—Uvaria, or Aloe Aletris.

ALYSSUM—Madwort, or *Alysson*—Rock, or Common Yellow—Sea Purslane-leaved—Trailing White—Yellow of Crete—Prickly Upright White—North American Purple—Hoary-leaved—Bladder-podded—Mountain.

ALTHEA—Marsh-Mallow—Common Downy Entire-leaved—Cut-leaved Common—Hemp-leaved, or Palmated—Hairy Trifid-leaved.

AMMI—Bishop's-Weed—Major, or Greater—Glaucous-leaved.

ANCHUSA—Bugloss—Common Officinal Bugloss—Evergreen—Oriental, or Eastern—Virginian.

ANDRYALA—Downy Sow-Thistle—Woolly-leaved—Rough Woolly-leaved.

ANEMONE—*Anemone*—Garden Anemone, many varieties—White Wood Anemone—Blue Wood—German Wood—Double Wood—Forking-stalked—Narcissus-flowerd—Goat's-rue-leaved, or *Thalictroides*—Apennine Blue-flowered—Alpine White-flowered, major and minor.

ANEMONE

ANEMONE-PULSATILLA, or Pasque-Flower—Common Large-flowered.

ANEMONE-HEPATICA, or *Hepatica*——Blue-flowered—White-flowered—Double-flowered of each.

ANGELICA—*Angelica*—Common *Archangelica*—Wild or Wood Angelica—Dark-purple of Canada—Shining-leaved Canadian.

ANTHEMIS—Chamomile——Noble, or Common Single-flowered——Double-flowered Common——*Pyrethrum*, or Pellitory of Spain—Alpine—Dying Tansey-leaved Swedish—Sea Chamomile.

ANTHERICUM, or Spider-wort——*Liliago*, or Single-stalked White—Branching-stalked—*Liliastrum*, or St. Bruno's Lily—Revolute-flowered.

ANTHYLLIS—Kidney Vetch——Scarlet-flowered, or *Vulneraria*.

ANTIRRHINUM—Snap-Dragon—Greater Snap-Dragon, many varieties, of different colours—Montpelier Sweet-smelling——Flax-leaved——Broom-leaved—Rock Snap-Dragon of Spain.

ANTIRRHINUM-*Linaria*, or Toad-Flax—Yellow-flowered.

APOCYNUM——*Dog's-bane*——Tutsan-leaved——Canadian.

AQUILEGIA——Columbine——Common Starry-flowered—Double Starry-flowered—Rose-flowered—Nectarium-flowered——Double and Treble

Nectarium-flowered——Variegated-flowered of each—Canada Dwarf Columbine.

ARABIS *Alpina*, or Alpine White——Bastard. Tower-Mustard.

ARISTOLOCHIA——Birthwort——*Pistolochia*, or Dentated Heart-leaved Spanish—Long Birthwort —Round Birthwort.

ARTEMISIA—Mugwort and Wormwood, &c.— Common Mugwort—*Absinthium*, or Wormwood —Pontic, or Roman Wormwood—Maritime, or Sea Wormwood—Santonica, or Tartarian Mugwort—Blueish, or Lavender-leaved Sea Wormwood.

ARUM—Wake-Robin—Spotted-leaved—Variegated-leaved—Three-leaved—Broad-leaved—*Dracunculus*, or Dragon's.

ARUNDO—Reed—Common Marsh Reed—Portugal Reed——Variegated Portugal Reed——Reed Grass.

ASARUM—Asarabacca—Common European—Canada—Virginian.

ASCLEPIAS, or Swallow-wort—Common White —Yellow—Black—Flesh-coloured—Syrian, or Dog's-bane—Purple Dog's-bane—Orange Apocynum.

ASPHODELUS, or King's-Spear—*Asphodel*—Yellow—White—Branching—Dwarf.

ASPE-

ASPERULA—Woodroof—Odoriferous, or Sweet-scented.

ASPLENIUM—Spleenwort, or Hart's-Tongue—*Ceterach*, or Common Spleenwort—*Scolopendrium*, or Common Hart's-Tongue, comprising the Curled-leaved, Waved-leaved, Multifid-leaved, and Cut-leaved—*Trichomanes*, or Maiden-hair—*Adiantum nigrum*, or Black—*Ruta muraria*, or Wall Rue.

ASTER, or Starwort—Tradescant's, or Michaelmas Daisy——*Amellus*, or Italian After——Great-flowered Blue, or Catesby's Starwort——Blue Alpine——Heath-like Bushy——Divaricating-branched—New England—Red-stalked—Flax-leaved—Toad-flax-leaved—Heart-shaped-leaved—*Tripolium*, or Sea Starwort——One-coloured Blue——Stiff-leaved—Mutable, or Variating-flowered——New Holland Waved-leaved——Smooth-leaved—Bushy White—Sorry-flowered—Small-leaved.

ASTRAGULUS—*Milk-vetch*, or Wild Liquorice—Fox-tail *Astragulus*—Goat's-Rue-leaved—Alpine——*Cicer*, or Bladder-podded—Liquorice-leaved—Great Yellow Eastern.

ASTRANTIA——*Masterwort*——Great Black,—Minor Black.

ATHAMANTA—*Meum*, or Spignel.

ATLOPA——Deadly Nightshade——*Belladona*, or Common Poisonous—*Mandragora*, or Mandrake.

BELLIS—*Daisy*—Double White—Double Red—Double Red and White—Double Flesh-coloured Proliferous, or Hen and Chickens—Cock's-comb Red—White Cock's-comb-flowered.

BORAGO—*Borage*—Perennial of Constantinople.

BETONICA—*Betony*——Officinal or Common—Danish—Eastern—Alpine.

BUBON—Macedonian Parsley—Common of Macedonia—Galbaniferous Sicilian.

BUPTHALMUM—Ox-eye—Helianthoide Ox-eye—Great-flowered.

BUPLEURUM—*Hare's-ear*—Long-leaved.

BUTOMUS—*Fowering-Rush*.

CACALIA—*Foreign Colt's-Foot*—Alpine—Spear-leaved—Orach-leaved—Sweet Canadian.

CALTHA *palustris*, or *Marsh-Marigold*—Double-flowered.

CAMPANULA—*Bell-flower*—Pyramidal Blue——Pyramidal White—Peach-leaved White—Peach-leaved Blue—*Trachelium*, or Nettle-leaved White—Nettle-leaved Blue—Broad-leaved.

CAMPANULA *media*, or *Canterbury Bells*—Blue-flowered—Purple—White—Striped—Double.

CARDAMINE—*Lady's-Smock*—Meadow Purple-flowered—White—Double—Three-leaved.

CALLA

CALLA *paluſtris*, or Marſh Baſtard Dragons, or Arum.

CARDUNS—Thiſtle——Fiſh Thiſtle—Helenium-leaved, or Melancholy Thiſtle.

CASSIA *marilandica*—Maryland Wild Senna.

CATANANCHE *cærula*——Blue-flowered Candy Lion's-foot.

CENTAUREA—*Centaury*——Greater Purple—Woad-leaved Yellow—Mountain Perennial Blue Bottle—White-leaved Mountain——Pectinated-leaved—Shining-leaved—Great-headed—*Jacea*, or Knapweed.

CHIERANTHUS—Wall-Flower—Yellow Wall-Flower—Bloody Wall—White Wall; double of each.

CHEIRANTHUS *Icanus*—Stock Gilliflower——White Stock—Brompton, or Scarlet Stock—Queen Stock—Pale-red—Purple—Striped

CERASTIUM—Mouſe-ear Chickweed—Creeping—Downy-leaved.

CHELIDONIUM—*Celandine*—Greater—Double-flowered—*Glaucium*, or Horned Poppy.

CHELONE, or Maryland Fox-glove——Smooth White—Red Roſe-coloured—Hairy Blue——*Penſtemon*, or Amplexicaule-leaved.

CHRYSANTHEMUM, or Corn Marigold—Late Daiſy flowered——Great Daiſy-flowered—Montpelier—Corymbiferous.

CHRYSOCOMA—Goldy-Locks—German Chryſocoma.

CHRYSOSPLENIUM—Golden Saxifrage—Oppoſite-leaved—Alternate-leaved.

CIRCÆA—Enchanter's Nightſhade——Common Erect-ſtalked—Canada Broad-leaved——Alpine Climbing.

CLEMATIS—Virgin's Bower—Upright White—Entire-leaved Blue—Creeping.

CLINOPODIUM——Field Baſil, or Marjoram—Common Round-headed——Hoary-leaved——Rough-leaved.

CLYPEOLA *maritima*, or Sea Spaniſh-Treacle Muſtard.

COLLONSONIA—Canadian:

COMARUM *paluſtre*, or Marſh Cinquefoil.

CONVALLARIA—*Lily of the Valley*—Common White—Double—Red—Striped.

CONVALLARIA *Polygonatum*, or Soloman's-Seal —Common Many-pointed—Many-flowered——Two-flowered—Racemoſe-flowered——Whorled-flowering—Broad-leaved—Three-leaved.

CONVOL-

CONVOLVULUS, or Bindweed—Linear-leaved Dwarf—*Soldanella*, or Kidney-leaved Dwarf.

CONYZA *candida*, or White Flea-bane.

COREOPSIS—*Tick-seeded Sun-flower*—Alternate-leaved—Three-leaved—Whirled-leaved.

CORTUSA—Bear's-ear Sanicle—Austrian Short-cupped—Siberian Long-cupped.

COTYLEDON *umbilicus*, or Navelwort.

CRAMBE *maritima*—Sea Colewort, or Cabbage.

CYCLAMEN, or Sow Bread—Spring-flowering White—Red—Purple—Variegated—Marbled-leaved—Autumnal-flowering White—Purple-flowering Round-leaved—Red or Purple—White.

CYNOGLOSSUM *Omphaloides*—*Omphaloides*, or Dwarf Creeping Spring Borage.

CYPRIPEDIUM—Lady's Slipper—*Calceolus Maria*, or Common Lady's Slipper, with purple, red, yellow, striped, and variable flowers—Bulbous-rooted—Canadian.

DELPHINIUM—*(Dolphin Flower)*—*Larkspur*—Great-flowered Bee Larkspur—Taller Bee Larkspur—American—*Staphisagria*, or Staves-Acre.

DENTARIA—*Toothwort*—Five-leaved—Nine-leaved—Bulbiferous.

DIAN-

DIANTHUS *Caryophyllus*—*Clove Gilliflower*, or Carnation, comprising the Pink and Sweet William—Common Red Clove—Carnation, having plain red flowers, white, yellow, and with variegated red and white; variegated red, purple, and white; variegated scarlet and white flowers, double of each, comprising numerous varieties, divided by the florists into classes.

DIANTHUS *deltoides*, or *Pink*—Common Red——Damask-red——White——White-fringed——Pheasant's-eye, of many varieties—Red Cob—Deptford Pink—Grey-leaved Mountain—Maiden Pink.

DIANTHUS *barbatus*—Sweet William—Narrow-leaved, with red, purple, white, spotted, and with variegated flowers—Broad-leaved, with tall stalks—Flesh-coloured——Rose coloured——Pure white and dotted flowers—double and single of each.

DICTAMNUS—*White Dictany*, or *Fraxinella*—White—Red—Striped.

DIGITALIS—*Fox-glove*—Great Yellow—Lesser Yellow—Purple—White—Iron-coloured.

DODECATHEON—American Cowslip.

DORONICUM—Leopard's-bane—Greater Heart-leaved——Plantain-leaved——*Bellidiastrum*, or Alpine White Daisy—Larger Broad-leaved, with red and white flowers.

DRABA—Madwort—Alpine Yellow——Pyrenean Wedge-shaped-trilobated-leaved—Hoary-leaved.

DRACO-

DRACOCEPHALUM—Dragon's-head——Virginian Sawed-leaved——Auſtrian Cut-leaved——Ruyſchiana, or Siberian Entire-leaved.

DRYAS *octapetala*————Eight-leaved-flowered *Dryas*.

ECHINOPS—Globe-Thiſtle—Common Globular-headed—*Ritro*, or Leſſer.

ECHIUM *Vulgare*, or Common Viper's Bugloſs.

EPILOBIUM——French Willow——Narrow-leaved White—Purple-ſtriped——Broad-leaved White—Hairy-purple.

EPIMEDIUM *alpinum*, or Alpine Barrenwort.

EQUISETUM *hyemale*, or Winter Horſe-tail.

ERIGERON—Greater Flea-bane.

ERYNGIUM—*Sea Holly*—Common Blue—Amethyſtine Light-blue—White—Plane-leaved—Alpine—Aquatic American.

ERYSIMUM—Common Yellow—Double Yellow.

ERYTHRONIUM—*(Dens Canis)*——*Dog's Tooth*—*Violet*—Purple—White.

EUPATORIUM——Hemp Agrimony——Common European Red—Spotted-ſtalked—Tall Purple—Aromatic White—Tall Narrow-leaved White—Perfoliated.

EUPHORBIA——Spurge——Coral-ſtalked——*Myrſinites*, or Spatulate Broad-leaved.

FERULA

FERULA—*Fennel Giant*—Common Yellow—Canadian Shining-leaved—Glaucous, or Grey-leaved——Tangier Cut-leaved.

FRAGARIA—*Srawberry*—Common Red Wood-Strawberry——White Wood—Green Wood——Scarlet Strawberry—Hautboy Strawberry—Large Chili—Alpine, or Monthly Prolific.

FRANKENIA—Sea-Heath—Smooth—Hairy——Powdered.

FUMARIA—*Fumatory*—Bulbous-rooted—Purple Hollow Bulbous-rooted—White—Yellow.

GALEGA *officinalis*, or Common White Goat's-Rue—Purple.

GALEOPIS—Hedge Nettle—Common Perennial Whorled Six-flowered—Variegated-leaved.

GALIUM—Lady's Bed-ſtraw—Northern Smooth-leaved—Round-leaved——Yellow——*Mollugo*, or Mediteranean Spreading-branched——Glaucous-leaved.

GAURA *biennis*—Biennial Virginian Looſe-ſtrife.

GENTIANA—*Fellwort*—Dwarf Blue Gentianella—Aſclepias-leaved Blue—Croſſwort Gentian—Purple—Great Yellow.

GERANIUM——*Crane's-Bill*——Maritime Heart-leaved—Knotty-ſtalked—Meadow Blue—White-flowered——Roman Large Purple——Bloody—Streaked-flowered——Black-flowered——Spotted-leaved—and ſome others.

GEUM

GEUM—Herb-Bennet—Virginian Ternate-leaved—Common Avens, or Lyrate-leaved—Aquatic Nodding-flowered—Mountain Inclining-flowered.

GLADIOLUS—*Corn Flag Lily*—Red—Purple-ſtriped.

GLOBULARIA—*Globular Blue Daiſy.*

GLYCYRRHIZA—*Liquorice*—Common Prickly-podded—Smooth.

GNAPHALIUM—*Everlaſting*—Common Hoary White—Plantain-leaved—Male-flowered—Female-flowered—Alpine—Wood Single-ſtalked—Stæchas-leaved.

GRATIOLA *officinalis*—Common Hedge Hyſſop.

GYPSOPHYLLA—Perfoliate-leaved—Proſtate Diffuſed-ſtalked—Tall Siberian—Aggregate-flowered—Faſtigiate-umbelled—Paniculated.

HEDYSARUM—*French Honeyſuckle*—Common Red-flowered—White-flowered—Canadian Red—White—and Purple.

HELENIUM—Baſtard Sun-flower—Autumnal flowering—Downy-leaved—Broad-leaved.

HELIANTHUS—*Sun-flower*—Common Multiflorous Perennial Yellow—Double-flowered—Tall Penſylvanian—Giant-ſtalked—Ten-petal-flowered—Dark-red Diſked—Narrow-leaved—Divaricate-branching.

HELLE-

HELLEBORUS—*Hellebore*—Stinking Great Wild Black—Green-flowered—True Black Hellebore, called Christmas Rose—Winter Aconite.

HEMEROCALLIS—*Day Lily*—Common Yellow—Lesser Yellow—Flame-coloured.

HESPERIS—*Dame's-Violet*, or Rocket—Sweet-scented White, Purple, and Double—Scentless White, Purple, and Double—Night-smelling.

HEUCHERA *Americana*—American Sanicle.

HIBISCUS *palustris*, or Marsh Althea.

HIERACIUM—*Hawkweed*—Orange-coloured-flowered—German Oval-leaved—Umbellate-flowered.

HIPPOCREPIS *comosa*, or Tufty-headed Horse-shoe Vetch.

HORMINUM—*Clary*—Pyrenean.

HUMULUS—Hop-plant.

HYDRASTIS *canadensis*, or Canada Yellow-root.

HYDROPHYLLUM—Water-leaf—Virginian—Canadian.

IBERIS *rotundifolia*, or Round-leaved Perennial Candy-Tuft.

IMPERATORIA *Ostruthium*, or Greater Masterwort.

INULA,

INULA, or Elecampane—Common Oval Rough-leaved—Samphire-leaved—Hairy-leaved—Willow-leaved—*Oculus-Christi*, or Woolly Flea-bane.

IRIS——*Flower de Luce*, or Flag-Flower——Dwarf Auſtrian, with purple, blue, red, bluſh-white, and variegated flowers—Spring-flowering Blue—Chalcedonian Black and White——German Violet Iris—White Florentine—Yellow Florentine—Two-flowered—Variegated Hungarian——Pocock's—Oriental White—Stinking Gladwin—Martinican Black and Yellow—Graſs-leaved—Elder-ſmelling—Variable-coloured—Siberian Blue—Tuberous-rooted Snake's-head Iris—*Siſyrinchium*, or Crocus-rooted Spotted-blue——*Xiphium*, or Bulbous Iris, many varieties—Perſian Bulbous Iris—(See *bulbous roots*)—Yellow Marſh Flag.

IXIA—Bulbous Italian, White, Purple, Blue, &c.—Chineſe Tuberous—Spotted Yellow.

LAMIUM—Archangel—*Orvala*, or Great Purple—Garganian Downy-leaved—Smooth-ſtalked Italian—Spotted—White.

LASERPITIUM—Laſerwort—Three-lobed-leaved—*Siler*, or Mountain Oval-leaved—Broad-leaved—Narrow-leaved.

LATHYRUS—*Everlaſting Pea*—Common Broad-leaved—Great-flowered.

LEONTICE—Lion's-Leaf.

LEONTODON *aureum*, or Golden Dandelion.

LEONURUS—Lion's tail, or Motherwort—Common—Tartarian.

LEPIDIUM *latifolium*, or Broad-leaved Pepperwort.

LIGUSTICUM—Lovage——Levisticum, or Common—Scotch.

LINUM—*Lint*, or Flax—-Large Perennial Siberian.

LITHOSPERMUM——Gromwell——Common Smooth-seeded—Virginian Broad-leaved—Purple—Blue.

LOBELIA—*Cardinal-Flower*—Common Scarlet—Blue—White.

LUNARIA—Moonwort, or Honesty—-Common Honesty, or Sattin Flower—Perennial.

LUPINUS *perennis*—*Lupine*—Perennial Blue.

LYCHNIS—*Campion*—-Scarlet Lychnis—-Double Scarlet—Double White *Bachelor's Button*—Double Red Bachelor's Button—*Ragged Robin*, or Cuckow-Flower—-Double-flowered Purple——*Catchfly*—Single Red—Double Red——Double White——Alpine, with bifid petals.

LYCOPUS—Water Horehound—Common European—Virginian.

LYSIMACHIA—-Loose-strife——Common Great Yellow——Ciliated Canada Yellow——Willow-leaved—Nummularia, or Moneywort.

LYTHRUM

LYTHRUM—Willow-Herb—Common Tall Purple-ſpiked—Red-ſpiked.

MALVA—*Mallow*—Vervain Mallow, with multifid-leaves—Muſk-ſmelling Jagged leaved.

MARRUBIUM—Horehound—Common—White.

MELISSA—Baulm—Common Officinal——Great-flowered—*Calamintha*, or Calamint.

MELITTIS *melliſſophyllum*, or Baulm-leaved Baſtard Baulm.

MENTHA—Mint—Common Green Spear-Mint—Pepper-Mint—Curled-leaved—Round-leaved—Variegated-leaved—Water Mint—Wood Mint.

MENTHA *Pulegium*, or Penny-royal——Common Virticillated, or Whorled.

MERCURIALIS——Mercury——Perennial, with rough leaves—Tomentoſe, or Downy-leaved.

MIMULUS, or Baſtard Monkey-Flower—Gaping-flowered—Yellow.

MATRICARIA—*Feverfew*—Double-flowered.

MOMORDICA—Spurting Cucumber.

MONARDA—Lion's-Tail—Fiſtulous Purple——Punctated, or Yellow-ſpotted—White—*Oſwego Tea*, or Scarlet Lion's-Tail.

NEPETA—*Nep*, or *Cat-Mint*—*Cataria*, or Common Cat-Mint—Leſſer—Narrow-leaved—Blue Spaniſh—Hairy.

NYMPHÆA—Water Lily—Yellow—White.

OENOTHERA—*Tree Primrose*——Biennial Common Yellow—Shrubby-ſtalked Perennial—Dwarf Perennial.

ONOCLEA *ſenſibilis*, or Senſible Stone Fern.

OPHIOGLOSSUM *vulgatum*, or Common Adder's-Tongue.

OPHRYS—*Twyblade*—Common Oval-leaved——Spiral——Bird's Neſt—Man-ſhaped-flowered—Inſectiferous, conſiſting of the Fly-ſhaped——Bee-ſhaped—Beetle-ſhaped, and Spider-ſhaped-flowered.

ORCHIS—*Fool-ſtones*——Male—Female——Two-leaved Butterfly-ſhaped-flowered—Military, or Man-ſhaped—Broad-leaved Hand-rooted—Spotted-leaved Hand-rooted—Gnat-ſhaped.

ORIGANUM——Marjoram——Common Broad-leaved—Curled.

OROBUS—*Bitter Vetch*—Vernal *Orobus*—Yellow—Black—Pyrenean Purple—Wood *Orobus*——Baſtard Lathyrus.

OSMUNDA—Flowering Fern—Royal Fern——Curled Stone Fern—Moonwort Fern—Spiked—Ruſſian.

OTHONNA *cheirifolia*, or Wall-flower-leaved African Ragwort.

OXALIS—Wood Sorrel—*Acetosella*, or Common—Purple-flowered—Upright Virginian.

PÆONIA—*Peony*——Common Single Red—Male Peony—Female Peony; comprising Double Red, Double Purple—Rose-coloured—Double Black—Large Blood-red——Double White-flowered——Narrow-leaved.

PANAX *quinquefolia*—*Ginseng*—Five-leaved.

PANCRATIUM—Sea Daffodil—Common Maritime—Illyrian Multiflorous.

PAPAVER—Poppy—Cambrian, or Welsh Yellow—Eastern Red.

PARIS—True-love, or One-Berry—Quadrifoliated, or Four-leaved.

PARTHENIUM *integrifolium*, or Entire-leaved Bastard Feverfew.

PELTARIA *alliacea*——Alliaceous Heart-angular-leaved.

PHLOMIS—Jerusalem Sage—Tuberous-rooted—Herba-venti, or Wind-Herb.

PHLOX—*Lychnidea*—Smooth-leaved Red—Carolina Shining-leaved—Hairy Virginian—Spotted-stalked—Paniculated-flowering——Divaricating-branched—White.

PHYSALIS—*Winter* Cherry—*Alkekengi*, or Common.

PHYTOLACCA—*American Nightshade*—Decandrious Purple-flowered.

PHYTEUMA——Horn-Rampion——Paucious-flowered—Orbicular-leaved.

PINGUICULA *vulgaris*, or Common Butterwort.

PLANTAGO—*Plantain*——Major, or Greater——Asiatic—Tall Italian—Middle—Maritime—Lanceolate-leaved—White Spanish.

PLUMBAGO—*Leadwort*——European Blue and Purple.

PODOPHYLLUM *peltatum*, or Shield-leaved Duck's-foot—Two-leaved.

POLEMONIUM—*Greek Valerian*——Blue—White—Creeping.

POLYGALA-*Senega*—Rattle-Snake-root.

POLYGONUM—Knot-grass—*Bistorta*, or Bistort—Viviparous, or Proliferous—Virginian.

POLYMNIA—*Canada Chrysanthemum*—Canada Alternate-leaved——*Uvedalia*, or Opposite-leaved Virginian.

POLYPODIUM—Polypody-Fern——Common——Male—Female——Welsh——Prickly——Fragrant-smelling——Fragilic, or Brittle——*Dryopteris*, or Dwarf Branching—*Lonchitis*, or Lunulate-ciliated-leaved—Stone.

POTENTILLA—*Cinquefoil*——Silvery-leaved——Golden-leaved—Rock Cinquefoil—Upright——Hairy—Strawberry Cinquefoil—Canadian.

POTERIUM *sanguisorba*, or Garden Burnet.

PRIMULA

PRIMULA—*Primrose*—Common Spring Primrose—Yellow-flowered—White-flowered—Paper-white—Red—Purple, double of each—*Cowslip Primrose*, or Cowslip—Common Yellow—Double Yellow—Scarlet—Hose in Hose—Furinose crenated-leaved, or Bird's-eye.

PRIMULA *elution*, or Polyanthus; comprehending a vast variety of Deep-purple-flowered—Dark-reds—Dark-crimsons—Gold-coloured—Orange-coloured—Striped, and with innumerable intermediate shades, stripes, and variegations.

PRIMULA-*Auricula*, or *Auricula*, of numerous varieties, as Round-leaved—Narrow-leaved Green-leaved—White-leaved, &c. and of flowers there are various purples, reds, yellows, buff-colours, striped, variegated, &c. of numerous darker, and lighter shades, tints, and variegations without end.

PRUNNELLA—Self-Heal—Common—Great-flowered Common—Cut-leaved—Hyssop-leaved.

PTERIS—Brakes—Common European—Dark-purple Virginian.

PULMONARIA—Lungwort—Common Spotted, of Red, Purple, Blue, and White—Narrow-leaved—Virginian.

PYROLA *rotundifolia*, or Round-leaved Winter-green.

RANUNCULUS—*Ranunculus*, or Crowfoot; consisting of two principal asiatic varieties of Ranunculus, the Turky and Persian; also several curious kinds commonly denominated Crowfoots.—See each as below.

Ranunculus,

Ranunculus, Turky—Large Double-red—Scarlet Double—Yellow Double.

Ranunculus, Persian; comprising an astonishing diversity of reds, scarlets, crimsons, flesh-colours, blues, purples, violet-colours—whites, cream-colours, ash-colours——yellows, orange, lemon-yellow, golden-yellow, olive yellow—browns, copper-colours——blacks, black-purples—tawneys, coffee-colours, both same colours, and variously tinged, striped, and variegated.

Ranunculus—Crowfoot—— Aconite-leaved White—Double White, or Ranunculus Bachelor's Button, or Fair Maid of France—Upright Double Yellow Crowfoot—Proliferous Double Yellow Crowfoot——Creeping Double Crowfoot——Grass-leaved Yellow—Plantain-leaved White—Great Yellow-flowered Eastern—Illyrian Crowfoot.

Ranunculus-Ficaria—Figwort, or Pilewort—Double Yellow.

RHEUM—*Rhubarb*—Palmated-leaved True Chinese—Raphontic, or Common—Compact Tartarian—Waved-leaved.

RHEXIA—*Rhexia*—Maryland Red——Virginian Red.

RHODIOLA *rosea*, or Rose-root.

RUBIA—Madder—Common Dyer's Madder——Foreign Four-leaved.

RUBUS——*(Bramble)*——Northern Herbaceous Rubus, or Cloud-berry—Chamœmorus, or Dwarf Mulberry—*Dalibarda*, or Creeping Heart-leaved Canadian.

RUDBECKIA

RUDBECKIA—*American Sun-flower*——Purple——Dark-purple—Cut-leaved——Hairy——Narrow-leaved—Three-lobed-leaved.

RUMEX—Dock and Sorrel—Patientia, or Patient Dock—Bloody Dock—Curled-leaved—Aquatic, or Water Dock—Britannic—Virginian—Acetosa, or Garden Sorrel, the spear-leaved, round-leaved, multifid-leaved.

SALVIA—*(Sage)*—Clary—Indian Clary—Glutinous, or Clammy Clary—Syrian Clary—Wild, or Wood Clary.

SAMBUCUS-*Ebulus*—*Ebulus*, or Dwarf Elder.

SAMOLUS *valerandi*, or Round-leaved Water-Pempernel.

SANGUINARIA—*Puccoon*—Canada Puccoon.

SANGUISORBA——Burnet——Common Garden Burnet—Canadian.

SANICULA—Sanicle—European—Maryland.

SAPONARIA—Soapwort——Double-flowered——Purple—Hybridan, or Mongrel Concave-leaved.

SARRACENIA—Side-Saddle-flower——Common Purple—Yellow Sweet.

SATUREJA—*Savory*—Mountain Winter—Virginian—Headed.

SATYRIUM—*Orchis*——Green Frog-flowered——White—Stinking, or Lizard-tail-flowered.

SAURURUS

SAURURUS *cernuus*, or Drooping Lizard's-tail.

SAXIFRAGA—*Saxifrage*—Common Granulous-rooted White——Granulous Double White——*Cotyledon*, or Large Pyramidal-flowering, several varieties—Changeable Lesser Pyramidal—Thick-leaved Dwarf Red——Round-leaved——Snowy-white——Wedge-leaved——Hypnum-leaved, or Lady's Cushion—Opposite-leaved—Punctated, or Dotted-leaved—Autumnal-flowering—Pensylvanian—Hairy Heart-leaved—Brook Palmated and Oval-leaved—Grey-leaved.

Saxifraga umbrosa, or London Pride.

SCABIOSA—*Scabious*—Dark-purple, or Common Sweet Scabious, with black-purple, pale-purple, red, white, variegated, and proliferous, hen and chicken flowers—Tall White—Alpine—Grass-leaved—Snowy Globular-flowered——Cut Tri-pinnated-leaved—Field Purple.

SCANDIX *odora*—Odoriferous Myrrh.

SCROPHULARIA—*Figwort*——Elder-leaved——Variegated Elder-leaved—Nettle-leaved—Shining-leaved—Trifoliate-leaved.

SCUTELLARIA—Skull-cap—Alpine Violet and White—Tall Nettle-leaved—Cretan Hairy White—Galericulated, or Common Skull-cap-flowered Oriental Yellow.

SEDUM—*Stone-crop*, or Lesser *House-leek*—Common Small Yellow Stone-crop, or Wall-Pepper—Large-flowered—White Stone-crop—Rock Stone-crop—Reflexed-leaved Yellow—Six-angled—Starry White

White—*Aizoon*, or Yellow Siberian House-leek *Anacampseros*, or Lesser Evergreen House-leek—*Telephium*, or Orpine.

SEMPERVIVUM—*Live-ever*, or Greater House-leek—*Tectorum*, or Common House-leek—Globular-headed—Cobweb Sedum.

SENECIO—*Groundsel*—Saracen's Tall Yellow—*Doria*, or Sea Lavender-leaved——*Doronicum*, or Alpine Groundsel, several varieties—Flax-leaved—Southernwood-leaved—Hastulate Spleenwort-leaved.

SERAPIAS, or Bastard Hellebore—Helleborine, or Common—Broad-leaved Multiflorous Helleborine——Long-leaved——*Lingua*, or Round-rooted.

SERRATULA——Saw-wort——Tinctoraceous, or Common——Virginian Peach-leaved——Spiked American—Rough-headed—Scariose, or Rough-flowered—New-York Pendulous-leaved—Glaucous-leaved—Narrow-leaved.

SIBBALDIA *procumbens*, or Trailing Bastard Cinquefoil.

SIBTHORPIA *europæa*, or European Bastard Moneywort.

SIDERITIS *hyssopifolia*——Iron-wort——Hyssop-leaved.

SILENE—*Viscous Campion*—Nodding-spiked——Sea Three-flowered—Saxifrage Dwarf Lychnis—Virginian Many-formed.

SELPHIUM

SELPHIUM——*Bastard-Chrysanthemum*——Three-leaved—Laciniated-leaved—Perfoliated-leaved—*Asteriscus*, or Perennial Sun-flower-leaved.

SISYRINCHIUM——*Sisyrinchium*——Burmudian Deep-blue—Narrow-leaved.

SMILLAX *herbacea*——Herbaceous Rough Bind-weed.

SOLIDAGO—Golden Rod—*Virga aurea*, or Common Golden Rod—Tall Late-flowering—Broad-leaved—Purpleish Smooth-stalked——Canadian Tri-nervous-leaved—Stiff-leaved——Lateral, or Side-flowering——Flexible-stalked—New-York Naked-stalked—Mexican Oblique-stalked—Minute, or Diminutive—Rugose-leaved——Sweet-scented—White-flowered—Evergreen Canadian—Broad-leaved Evergreen.

SOPHORA—*Sophora*——Fox-tail Eastern-blue——Tinctoraceous Yellow Virginian——Blue Virginian.

SPIGELIA *marilandica*, or Maryland Worm-grass.

SPIRÆA—*Spiræa*—Trifoliate-leaved—*Ulmaria*, or Meadow Sweet, single and double——*Aruncus*, or Goat's-beard——*Filipendula*, or Dropwort, white, single, and double.

STACHYS—Base-Horehound—German—Cretan Marsh.

STATICE——Thrift, or Sea Pink——*Armeria*, or Common; comprising the Lesser Grassy-leaved—Greater Broad-leaved—Red-flowered—Scarlet and White-flowered.

Limonium,

Limonium, or Sea Lavender—Common, with oval lancet-leaves, Olive-leaved, and Dwarf-growing ——Specious-flowered——Tartarian Alternate-flowered——Sinuated-leaved——African Entire-leaved—Heart-leaved.

STIPA *pinnata*—Pinnated-leaved Feather-grass.

SWERTIA *perennis*—Perennial Marsh Gentian.

SYMPHYTUM—Comfrey—Common Officinal—Tuberous-rooted.

TABERNÆMONTANA—*(Tabernæmontana)*—Virginian *Tab.*

TANACETUM—*Tansey*—Common Plane-leaved, Curled-leaved, Variegated—*Balsamita*, or Costmary.

TELEPHIUM *imperati*, or True Orpine of Imperatus.

TETRAGONOTHERA *Helianthoides*, or Bastard Sun-flower.

TEUCRIUM—*Germander* and Mountain Poley—Shining-leaved——Pyrenean Wedge-leaved——Canadian Oval-lancet-leaved——Siberian Oval-leaved—*Chamædrys*, or Creeping—*Scordium*, or Water Germander——*Scordonia*, or Wood Sage ——*Polium*, or Mountain Poley—Common—*Polium*, the Yellow-flowered, White-flowered, Trailing-stalked, Upright-stalked, &c.——Mountain Lavender-leaved—Pyrenean Wedge-leaved——Headed Upright—Broad-leaved Upright.

THALICTRUM——*Meadow-Rue*, or Feathered-Columbine—Great Yellow—-Columbine-leaved, called Feathered-Columbine—Narrow-leaved—Shining-leaved—Purple Canadian——Tuberous-rooted Large White—Cornutus's Fibrous-rooted White Canadian—Alpine Naked-ſtalked.

THAPSIA *villoſa*—Hairy Deadly Carrot.

THYMUS—Thyme. (Underſhrubby plants.) See the *hardy tree and ſhrub arrangement*.

TIORELLA *cordifolia*——Heart-leaved Sceptre-flower.

TORMENTILLA—Tormentil——Upright-growing—Repent, or Creeping-rooting-ſtalked.

TRACHELIUM *cæruleum*—Blue Throatwort.

TRANDESCANTIA *Virginiana*—Virginia Spiderwort, the Blue-flowered—White-flowered.

TRAGOPOGON—-Goat's-beard—-Meadow Great Yellow—Delechamp's Spaniſh.

TRIENTALIS *Europæa*——European Chickweed Wintergreen.

TRIFOLIUM—-Trefoil—-Strawberry-flowered—Alpeſtre Sub-globular-ſpiked——Alpine Naked-ſtalked—Lupinaſter, or Baſtard Lupine.

TRILLIUM *erectum*—Erect Herb True-love.

TRIOSTEUM

TRIOSTEUM——*False Ipecacuanha*——Perfoliate-leaved—Narrow-leaved.

TROLLIUS—*Globe Ranunculus*——European *Trollius*, or Locker Gowlans.

TUSSILAGO—*Colt's-foot*—*Farfara*, or Common—Alpine Round-leaved Purple——*Anandria*, or Lyre-shaped-leaved——White-flowered—*Petasites*, or *Tussilago Major*.

URTICA—*Nettle*—Snowy Chinese—Canadian——Hemp Siberian.

UVULARIA——*(Uvularia)*——Amplexicaul-leaved—Perforated-leaved.

VALANTIA *cruciata*, or Cross-wort.

VALERIANA—*Valerian*—Red-flowered—White-flowered——*Phu*, or Garden Valerian——Officinal Wholly Pinnated-leaved—Pyrenean Heart-leaved Tripterate Dentated-leaved Alpine——Dioecious-flowered—Mountain Simple-stalked.

VERATRUM——*White Hellebore*—Common White—Black-red.

VERBASCUM—*Moth Mullein*——*Thapsus*, or Great White, or High-taper——Purple-flowered——*Lychnitis*, Wedge-leaved, Yellow-flowered, and White-flowered——Phlomis Hoary-leaved——*Blattaria*, or Yellow Mullein—White *Blattaria*——Black Mullein—Bear's-ear Low Alpine Mullein.

VERBENA——*Vervain*——Buenos Ayres Tall—Haſtated, or Spear-leaved—Nettle-leaved.

VERONICA——*(Veronica) Speedwell*——Virginian Tall White——Maritime Blue-flowered and White-flowered——Long-leaved Blue——Broad-leaved—Spurious Narrow-leaved—Hoary-leaved—Siberian Seven-leaved——Auſtrian Dentated-leaved—Daiſy-leaved—Spiked Simple-ſtalked—Paniculated-long-cluſtered—Acinoſe Oval Smooth-leaved—Teucrium, or Germander-leaved——Hybridan Speedwell, or Welſh *Veronica*—Officinal, or Common Wood *Veronica*.

VICIA—*Vetch*—Wood Vetch.

VIOLA—*Violet*—Odorous Common March Violet, the Blue-flowered, White-flowered, and Double-flowered——Hairy-leaved Scentleſs——Palmated-leaved——Foot-ſhaped Seven-lobed-leaved——Marvellous-flowered—Mountain Stalky—Canadian—Two-flowered—Marſh Violet.

ZYGOPHYLLUM——Bean-caper——*Fabago*, or Common.

THE foregoing liſt of perennials and biennials, compoſe a ſelection of all the moſt capital ornamental flowery plants of the fibrous and fleſhy-rooted tribe, cultivated in the Engliſh gardens; being ſuch as have roots compoſed either principally of numerous ſmall fibres, as in the greater number of fleſhy-forked parts, of one or ſeveral fleſhy tubers of

of an oblong and knobbed ſhape, and of grumous and granulous roots, as in Ranunculus and Granulous White Saxifrage; all of which are peculiarly calculated for the embelliſhment of the pleaſure ground, &c. and being all of a hardy temperature will ſucceed in any common ſoil in the borders and other compartments: and being all kept in the common nurſeries for ſale, may be eaſily obtained at a moderate rate, and having but a few of each, may with facility be increaſed by raiſing them in the open ground, the greater part by ſeed in the Spring, and the perennial kinds alſo moſt of them either by off-ſets, or by ſlipping or parting the roots in Autumn or early in Spring, and ſome by cuttings of the young flower-ſtalks in Summer; layers of the young ſhoots, as in Carnation, by pipings or cuttings of the tops of the ſhoots, as in Pinks, and by ſlips of the young branches, as in the Double Wall-flower, Pinks, &c.

They may be employed both to adorn the common flower borders, beds, &c. of the pleaſure ground and flower garden, and to diverſify the ſhrubbery compartments towards the front, in the ſpaces between the ſhrubs; in all of which being properly arranged, the tall growers behind and the loweſt in the front, in regular gradation of height, they will effect a delightful variety, producing a continual bloom, in the different ſorts, throughout the Spring, Summer, and Autumn ſeaſons, from January or February till November, as formerly hinted.

Many of the ſorts are alſo proper to plant in pots, for moving occaſionally when in flower, to decorate any particular department, ſuch as Carnations, Pinks, Double Sweet-Williams, Wall-flowers, Stock-Gilliflowers, Double Rockets, Scarlet Lychnis, and various of the moſt ſhowy, elegant, and remarkable flowering kinds.

Alſo ſome proper to be potted, as prize or ſtage flowers, particularly the fine Double Carnations, of the different claſſes mentioned in the liſt of plants under the genus *Dianthus*; likewiſe the *Auricula*; both of which plants comprehending a great variety in their flowers, of a vaſt diverſity and elegance of colourings, affording conſiderable entertainment to the curious, a collection of the capital ſorts demand culture in pots, to move upon a raiſed ſtage, covered at top, according as they come into bloom, both for the convenience of viewing the flowers to greater advantage, and for protecting them from rains and the ſcorching ſun, which would impair their beauty, and haſten their decay.

The ſeaſons for planting the different ſorts where required, both in the full ground and in pots, is either early in Spring, in February, March, and April, before they begin to ſhoot up for flowering, &c. or in Autumn, when the flower-ſtalks decay, principally from the middle or end of September till November, or almoſt any time, in the open weather, from October till the end of December, &c. and they will take root freely, and flower the following Spring, Summer, or Autumn, each in its reſpective ſeaſon.

Previous to planting the ſorts intended, in the full ground, let the borders, beds, and other compartments, be neatly digged one ſpade depth, formed generally with a gradual ſwell towards the middle, or the border riſing in a ſloping manner from the front to the back part, and rake the ſurface ſmooth.

Then having the plants of the ſorts required, taken up with good roots, which, in thoſe increaſed into large bunches, may be divided or ſlipped into ſmaller parts for increaſing the ſorts, if thought expedient; arranging the ſeveral kinds according to their degrees of growth, forwarder or more backward in the borders, &c. gradually from the loweſt near the front, to the talleſt in the middle or back part;

part; having particular care to diſtribute the different ſorts in ſuch order, according to their ſeaſons of flowering, as to afford a conſtant ſucceſſion of flowers from the earlieſt to the lateſt period; and, the early-blowing low growths, ſuch as Primroſe, Polyanthus, Hepaticas, Winter-Aconite, Auriculas, Violets, &c. always diſpoſed more or leſs towards the front of the borders and other compartments; performing the operation of planting, either by dibble for the ſmalleſt-rooted kinds; and the larger roots, by a trowel or ſpade, therewith making ſmall apertures for the reception of the plants, which, in either method, inſert in the earth down to the head, or a little over the crown of the root, cloſing the earth well about them; and if any are planted late in Spring, give a good watering at planting.

It is adviſable always to plant ſome large hardy perennials in the ſhrubbery compartments, on the boundaries of the main lawns and principal walks, as alſo in the running ſhrubberies, extending round paddocks, parks, &c. ſuch as the Aſters, Golden-rods, and Helianthus, and others both early and late flowering kinds.

Likewiſe, in wood-walks, wilderneſs-works, and thickets, ſhould plant a quantity of ſuch perennials as proſper in the ſhade and cloſe places under trees and ſhrubs, in which they will effect an agreeable variety.

Alſo, in rock-work, ruins, &c. may introduce many curious perennials that will have a pleaſing effect.

GENERAL OBSERVATIONS on this Class of Plants.

THE foregoing catalogue of this herbaceous class, comprise principally only all the herbaceous, fibrous, and fleshy-rooted perennial and biennial tribe, not the bulbous-rooted kinds nor the annuals, each of these being exhibited in separate classes; and the plants of this class are nearly all of an equal degree of hardiness so as they will all succeed in the open ground in any common soil and situation, or in pots, &c in the full air, except any particular curious sorts that may be occasionally removed to occasional shelter in Winter, though do not require any particular distinction in the arrangement in regard to their temperature, but such as require it is mentioned in the general works of the pleasure ground, and the treatment to be there observed; so shall only observe here, that the perennials or everlasting plants, or such that are of many years duration, are considerably more numerous than the biennials or two-years plants, fifty to one or more; and as the perennials are durable by the roots for many years, shooting up new flower-stalks annually, and raised occasionally both by seeds, roots, slips, and off sets, &c. the biennials only last two years, at least in perfection, arising the first year in a tuft of leaves, &c. and the second shoot up to flower, ripen seed, and then either mostly decay root and top, or such that survive another year, assume a weak straggling growth, and in a weakly state, and in the greater part can be raised principally only by seed sowed every year as in annuals, except in some particular sorts, which may be perpetuated by slips, cuttings, and layers, as in Wall-flower, Double Sweet-Williams, &c. and

and therefore, as the number of biennials of the flowery tribe that demand admittance as ornamental plants, are very inconſiderable in compariſon to the perennials, the following is a ſeparate liſt of ſome of the principal ſorts collected from the general arrangement:

Canterbury Bell-flower, the Blue—White.
Clary, Purple-topped—Red-topped.
French Honeyſuckle, Red—White.
Honeſty, or Moonwort.
Roſe-Campion—Red—White; the double ſorts continued by off-ſets or ſlips.
Scabious—Purple—White, &c. in varieties.
Snap-Dragon, in varieties; but will alſo ſometimes prove perennial, and may likewiſe be continued by cuttings of the young ſtalk.
Sweet-William, many varieties; but may alſo be perpetuated by layers of the young ſhoots annually, of any curious double ſort.
Stock-Gilliflower, or Stocks—the Brompton Stock—Queen Stock—White—Purple, &c.
Tree Primroſe—Common Yellow

Wall-flower, Yellow—Bloody, but theſe plants alſo often prove perennial if growing upon walls or any dry ſoil, and may be perpetuated alſo by ſlips or cuttings of the young ſhoots of the year in May; but it muſt alſo be obſerved, that the plants always flower in beſt perfection the firſt year; after which, although the plants may ſurvive, yet they aſſume a dwindling growth, and ſeldom flower well, ſo that ſome ſhould always be raiſed annually, both from ſeed of the ſingle, and ſlips of the double kinds.

Thus it may be obſerved, that the plants denominated biennials, that, although ſome ſorts will accidentally ſurvive the ſecond year, or may be perpetuated by layers, ſlips, and cuttings, yet the plants, both ſeedlings and others, never flower well after

after the first year, so must always raise a new supply annually, either by seed, for a general supply, or occasionally by the other methods, to perpetuate any particular sorts.

And as to the methods of propagation both for the perennials and biennials of the foregoing general arrangement, they are fully explained as below, each method under its proper head.

GENERAL METHODS of Propagating of this Class of Perennials and Biennials in the foregoing Catalogue.

AS to the general methods of propagation practised in raising the requisite supplies of this class of herbaceous, fibrous, and fleshy-rooted perennials and biennials in the foregoing arrangement, they consist of the following; and by one or other of which methods all the sorts are most easily propagated in abundance, principally in the open ground, and some occasionally assisted in hot-beds, &c. by seed, off-sets, slips, suckers, parting-roots, creep-roots, rooting-branches, layers, cuttings of the stalks, pipings of the shoots, and by heads, &c.—See each under its respective article, as below.

By SEED.

By seed almost all the sorts of the herbaceous flower plants in the catalogue arrangement may be raised, and in many sorts is the principal method of propagation, and by which, both single and double.

ble-flowered varieties are obtained, but as in numerous ſorts, the doubles being generally in moſt eſteem, and as they will not always retain their double property, or come the ſame again from ſeed, but often vary to other different varieties of inferior worth, that when ſuch double-flowered plants, and others of peculiar properties of fine colours, &c. are thus accidentally obtained, they muſt be propagated by any of the other methods, as by off-ſets, ſlips, parting-roots, &c. for when raiſed by any other way than by ſeed, they will retain all the properties of their parent, both in colour of the flower, doubleneſs, &c.

But as ſeed is the original mode of propagation by which all the numerous different varieties of curious flowers of every denomination were firſt obtained, it is proper to continue to raiſe more or leſs annually of the more curious kinds, by this method, for as in ſome, the varieties of new flowers acquired from ſeed are without end, ſuch as obtain in Carnations, Auriculas, Polyanthus, Anemones, Ranunculus, &c. which ſorts the floriſts never fail raiſing them abundantly every year from ſeed, and when they flower, they mark thoſe with good properties, and propagate them, ſuch as the Carnations by layers, and the Auriculas, Polyanthus, and Anemones, &c. by off-ſets and ſlipping the roots, and thus they are multiplied with all their properties retained permanent.

The ſeaſon for ſowing is principally in Spring, about March, April, and May, but moſtly in March and April for the general ſupply; and ſome ſorts alſo in Autumn; but let April be the general ſowing ſeaſon.

As to the mode of ſowing ſeed of this herbaceous tribe, it is either by ſowing on the ſurface and raking them in, ſowing on the ſurface and covering them in, or by ſowing in drills; each as below.

By

By raking in, this may be effected either in common borders, or in three or four-feet-wide beds of light earth; principally in the Spring ſeaſon, as before explained; let the earth be well digged, lay the ſurface level, but leaving it moderately rough, at leaſt not made finer than with proper breaking and levelling even with the ſpade, not raking till after ſowing the ſeed, which ſow with an even regular hand all over the ſurface of the bed or border, which ever it is, and directly, if the ground is perfectly light and dry, may tread down the ſeed evenly with the feet moderately cloſe to fix it evenly, and then rake it in with regularity, clearing off with the rake all large ſtones and any hard rough clods, leaving a ſmooth and even ſurface.

By covering in, let the ground be digged neatly, and as you advance, rake it well to break clods and ſmooth the ſurface, then dividing it into beds of three or four feet width, with foot-wide alleys between, which done, then, with the back of the rake turned teeth upward, ſhove the earth from off the ſurface of the bed into the alley, from half an inch to an inch or more deep, according to the ſize of the ſeed, going deepeſt for the larger ſorts; and forming the earth, as you ſhove it off, into an even ridge in the alley, cloſe along the edge of the bed, the ſeed is then to be ſowed evenly on the ſurface, moderately thick, and if large ſeeds, that before drawing the earth over them, may firſt with the back of the ſpade, pat or preſs them down evenly into the earth; but the ſmaller ſeeds will not require this unleſs you think it more expedient; and with the rake turned the right way, ſtriking it in the farther ſide of the ridge of earth which was ſhoved off the bed, and with a jerk, draw it evenly in a ſpreading order over the ſeeds, taking the length of the head of the rake at each ſtroke, and ſo proceed ſtroke and ſtroke till you cover in the ſeeds of each bed, and lightly rake the ſurface ſmooth.

Or

Or by covering in, that in ſowing ſome of the very ſmall or light ſeeds of any curious ſorts of plants, or ſuch as require to be but very lightly covered, may after raking the earth even and ſmooth, ſow the ſeed, and cover them in by ſifting fine earth over out of a ſieve, from half a quarter to a quarter of an inch deep, according to the ſize and ſubſtance of the different ſorts of ſeed.

Alſo when neceſſary to ſow any particular ſorts in pots or hot-beds, the earth therein being made fine and ſmooth at top, ſow the ſeed, and may cover it in either by ſifting earth over it, as above, or by ſcattering fine ſifted earth over them with the hand, the depth as obſerved above in ſifting.

By drilling in, this may be practiſed to good advantage to the larger ſeeds particularly, as a very regular way of covering them with earth all an equal depth; or may be practiſed occaſionally to almoſt any ſorts; and the method is, that having digged and raked the ground, and if thought proper, divide it into three or four-feet-wide beds; then, with a ſmalliſh drawing-hoe, held horizontally with the edge level with the earth, draw flat drills from half an inch to an inch or more deep, as the ſize of the ſeeds require, going deepeſt for the larger kinds, the drills from three inches to half a foot aſunder; ſow the ſeeds, each ſort ſeparate, evenly along the bottom of the drills, and with the rake or hoe, draw the earth evenly over them the above depth, and lightly rake the ſurface ſmooth.

Next, as to the culture after ſowing, in all the foregoing methods, the ſeeds of moſt ſorts will all vegetate the ſame ſeaſon, and the plants come up in from three or four to five or ſix weeks, and arrive to a proper growth for flowering next year; obſerving, that if the weather proves warm and dry, ſome moderate waterings will be of ſervice both before and after the plants appear; keep the beds very clean from weeds by a careful

hand-weeding; and the plants will advance in growth fit for pricking out into nurſery-beds, moſt of them the ſame year, in June, July, and Auguſt, taking opportunity of ſhowery weather when the ſeedlings are two or three inches high, and preparing beds of good earth three or four feet wide, and rake the ſurface, then, raiſing the ſeedlings out of the ſeed-bed with their full roots, trim any ſtraggling parts thereof, and with a dibble, plant each ſort ſeparate in rows ſix inches aſunder by nearly the ſame diſtance in the rows; giving directly a good watering, and repeat it as occaſion requires in dry weather, till the plants have taken good root and begin to grow.

Let them grow in theſe beds all Summer to get ſtrength againſt Autumn following for final tranſplantation; obſerving to keep them clean from weeds, and by October or November, or in the following Spring, the greater part will be arrived to a proper ſize for planting out where they are to remain to flower, and thoſe that are ſmall and weakly may remain another year, and may alſo have ſome in the nurſery-beds till you ſee them flower, to chuſe only the beſt.

However, at the above-mentioned time, in Autumn or in the Spring, about February, March, and April, prepare to plant out a quantity of the ſtrongeſt plants of the different ſorts into the borders and clumps of the pleaſure ground, ſhrubbery, and flower garden, to remain to flower; let the borders, &c. be digged for their reception, and rake them even, then take up the ſeedlings with a garden trowel or ſpade, preſerving a ſmall ball of earth about their roots, and opening holes at proper diſtances for the ſeveral ſorts, plant them carefully with the ball of earth entire, and they will thus not feel any check by removal, giving a little water, if the ground is dry, to ſettle the earth about their roots.

In

In Summer following, when the different ſorts flower, let thoſe of any particular good property in colour, doubleneſs, or mode of flowering, be marked for propagating, and increaſing them by ſlips, off-ſets, parting-roots, layers, &c.

As to the general culture of theſe plants when diſpoſed in the different flower compartments, is principally to keep them clean from weeds, and let ſuch as require ſupport, have ſticks or ſtakes placed timeouſly for that purpoſe when the plants or their flower-ſtalks are advanced in growth, for it is great merit to have the plants of large growth ſupported neatly in an upright poſition; and in doing this, it ſhould be neatly performed, and the ſupport and tying the plants thereto, concealed as much as poſſible from ſight; and not have ſticks taller than the natural height of the plants they are to ſupport; for it is diſagreeable to ſee the ſticks ſtarting conſiderably above the top of the plants; being, however, careful to allot tall plants, ſticks of proper length in proportion; and during the Summer and Autumn keep the plants clear from all ſtraggling ſhoots and decayed leaves, and according as they are paſt flowering, cut down the flower-ſtalks cloſe to the head of the plant: alſo, at the end of Autumn, about October and November, clear the plants in general from decayed ſtalks, leaves, and all litter; and then dig the borders about them to be clean and neat all Winter.———See the *general culture* of the *pleaſure ground*, &c.

By OFF-SETS of the ROOT.

By off-ſets of the root great numbers of the perennial tribe, both fibrous and tuberous-rooted kinds, are abundantly raiſed by off-ſet ſlips of the root or top, or of the top and root together, or

wholly of the root off-sets, being increased parts emitted from the sides of the parent plant, frequently furnished with roots, so as when detached, they at once form proper plants; and in some sorts, off-set young shoots are formed on the heads of the plants without any roots, will, notwithstanding when planted, put forth roots and grow, as sometimes obtain in the Auricula, House-leek, and some others of the succulent tribe; though in all sorts the already-rooted off-sets are considerably preferable; but as there are also many sorts whose off-sets at the time of slipping, consist entirely of roots, and some of tuberous fleshy parts, as in the Anemone, Ranunculus, Cyclamen, &c. they should be slipped accordingly: but as numerous of the fibrous-rooted perennials increase and multiply exceedingly into large bunches by root off-sets, they may be divided into so many separate young plants, as in Campanula, Catchfly, Aster, Perennial Sun-flower, Golden Rod, Polyanthus, and a vast many other sorts, as is obvious in their mode of growth; and they may either have the off-sets occasionally slipped off around the outside of the old plant, as it remains in the ground, opening the earth a little to admit of detaching the off-sets more readily, or the plant intended for slipping, taken wholly up out of the earth, and divided into separate off-set slips, not too small; and in the tuberous-rooted plants, the whole should always be generally taken up when designed to separate the off-sets; and as for the bulbous tribe, see *bulbous-rooted plants*.

The season for separating the off-sets, is, for the fibrous-rooted kinds, either soon after they have done flowering, in Summer or Autumn, in moist weather, or may be performed to these kinds almost in general, both in the Spring, before they begin to shoot considerably, in February, March, and April, and in the Autumn, when done flowering and

and ſhooting for that ſeaſon, any time from September till the end of October; or, indeed, ſome of the very hardy kinds, ſuch as Perennial Sun-flower, Golden Rods, Perennial Aſters, &c. may have the off-ſets ſlipped almoſt any time after flowering in Autumn, till the Spring, in open weather. But, as to ſuch of the tuberous-rooted plants whoſe tops wholly decay quite to the root ſoon after they have done flowering, as in Anemone, Ranunculus, &c. that period is the only time to ſeparate the off-ſets of all thoſe kinds of plants, for then their roots for a time drop their growing fibres, and remain in a ſtate of reſt, and may be taken up without detriment, but if moved out of the ground when growing, it weakens theſe kinds exceedingly in the root, ſo mark the time when their leaves decay in Summer, ſoon after they have flowered, as aforeſaid.

As to the method of performing the ſlipping off the off-ſets, it is effected either with the thumb and finger, or in the large bunchy fibrous and fleſhy-rooted plants, may uſe the aſſiſtance of a knife, or ſpade, &c. detaching the off-ſets, top and root together, not too ſmall, and with as much fibres to the bottom as poſſible; or in ſuch plants as afford off-ſets wholly above ground without root, take them off as low as convenient near the bottom, becauſe in ſuch, the lower parts are naturally adapted to put out roots; obſerving to plant the off-ſets directly in nurſery-beds ſix inches aſunder, or ſome of the ſtrongeſt, plant at once where they are to remain, as in Anenones, &c.

And in ſlipping the tuberous-rooted tribe of ſuch as have the off ſets conſiſting only of the tubers of the root, and whoſe leaves and top wholly decay in Summer ſoon after they have flowered, they muſt then be wholly taken up for ſeparating the off-ſets when required for increaſe; ſo ſlipping off all the

ſmaller off-ſet roots from the main ones; and may either plant the whole again directly, or, being taken up at the above period, may keep them out of the ground ſeveral months if required, which, indeed, is the moſt eligible practice for the fine kinds of Anemones and Ranunculus, ſo planting them again in Autumn or Spring, as directed for the bulbous roots.——See *bulbous-rooted plants*.

However, as to the off-ſets of all the fibrous-rooted tribe, let them be directly planted when ſlipped; all the ſmaller off-ſets plant in nurſery-beds or borders, in rows ſix inches aſunder, and give water, but the larger well-rooted off-ſets, may be planted at once in the borders or other compartments of the pleaſure ground and flower garden, where they are always to remain for flowering; they will moſtly all flower the following Summer, &c. in their proper ſeaſon; and as to thoſe in the nurſery-beds, after having one year's growth, will have obtained good ſtrength, and may in the Autumn or Spring after be tranſplanted in any place where required.

And as to the tuberous-rooted plants, whoſe leaves and top wholly decay to the very root ſoon after flowering, as aforeſaid, as prevail in the Anemone and Eaſtern Ranunculus, and ſome other tuberous kinds, the ſmaller off-ſets may either be planted again directly, or retained a month or two out of the ground, then planted; but the main roots and larger off-ſets, capable of flowering next year, may be kept out of the ground till Autumn, about September, October, and November, and others till Spring, in February or March, to plant for a ſucceſſional bloom; each planting may be ſome of the more curious ſorts in three or four-feet-wide beds, in rows ſix inches diſtance, by the ſame in each row, and two or three inches deep; ſome may be planted in the different flower borders in ſmall patches, four or five roots together, within a few inches diſtance;

diſtance; and as to the ſmaller off-ſets of theſe kinds, plant them in beds, by drawing drills in rows four inches aſunder and two deep; and, after having one or two years growth, take them up at the decay of the leaf in Summer, for full-blowing roots, and planted as above.

By SLIPS.

Many eminent herbaceous perennial and ſome biennial flower plants are plenteouſly propagated by ſlips of the root and top, or off-ſet young heads, and ſhoots; riſing in ſome both immediately from the ſides and crown of the root, or head of the plant above ground; in others, from the ſides of the ſtems; and ſome having abiding branches remaining the year round, as in the Wall-flower, &c. producing many young ſhoots in Spring, form proper ſlips in May and June the ſame year, when from three or four to five or ſix inches long; or, in ſome other herbaceous plants with abiding tops or heads, in Pinks, &c. ſlips of a year old or more will ſucceed: ſlips ariſing near the bottom will probably be more or leſs rooted, but ſuch as ariſe from above will be deſtitute of fibres, yet if ſlipped while young, and planted, they will emit roots, or ſuch may be greatly forwarded in a hot-bed, or if covered down with a hand-glaſs.

And the beſt ſeaſon for ſlipping, or detaching the ſlips for planting is March, April, May, June, &c. according as the ſlips, heads, or ſhoots of the different ſorts of plants arrive to a proper ſize, agreeable to the nature of growth of the reſpective kinds.

Numerous ſorts of herbaceous perennials produce plenty of bottom ſlips, iſſuing immediately from or near the crown of the root, as occur in many of the tribe of plants whoſe ſtems decay annually to the ground, or which do not ſhoot up to ſtem, but the head remains cloſe to the ground as in Auriculus,

Pinks,

Pinks, Houſe-leek, &c. and which may either be ſlipped the ſame year or in Spring following.

But in thoſe which naturally ſhoot up to ſtems annually, they ſhould be ſlipped the ſame year in Spring, when only from one or two, to three, four, five, or ſix inches length, ſlipping them clean to the bottom, with as much root part as poſſible; and thoſe which always remain low and cloſe to the ground, will alſo, in ſome ſorts, afford ſlips proper to be ſlipped the ſame year they are produced, in Spring, Summer, or Autumn, others not till Spring following, as it ſhall ſeem expedient by the growth of the ſlips, whether in ſhoots or heads; obſerving in general to detach the ſlips with the thumb, or with the aſſiſtance of a knife occaſionally, taking them clean off to whence they originate, ſtrip off any bottom leaves, and plant them in a ſhady border, or where convenient; or any of the more curious ſorts may be planted in pots, inſerting them more or leſs into the earth, according to their length, generally within an inch or two of their tops, and about from two or three to four, five, or ſix inches aſunder, according to their ſize and nature of growth; giving water at planting and till they ſtrike root and grow.

In plants with perennial or abiding ſtems and branches, or heads, they produce ſlips moſtly above, either from the ſides of the main head, ſide of the ſtem, or from the branches in branchy-headed kinds, as Wall-flowers, &c. and in moſt of theſe ſorts, the ſlips ſhould generally be taken off in April, May, or June, when from two or three to four, five, or ſix inches long, chuſing thoſe of the firmeſt robuſt growth, ſlipping them off with the thumb, cloſe to from whence they proceed; and ſtripping off the lower leaves, plant them in a ſhady border, introducing them well into the earth, give water directly and repeat it often till they take root, and afterwards in dry weather, and they will form tolerable good plants by next Autumn.

But

But although many ſorts of ſlips of the branches, &c. or others without roots when ſlipped will emit roots tolerably well, yet either any ſorts which root reluctantly, and any of the more curious ſorts which do not propagate freely by any other method, or that you would forward the rooting of particular kinds, they may be aſſiſted either by covering the ſlips cloſe down with a hand-glaſs when planted, to exclude the external air, or plant ſome ſlips in pots, and plunge them in a hot-bed or bark-bed, in a hot-houſe, &c.

The ſlips in general that ſucceed, will root abundantly well the ſame Summer, and ſhoot at top, and form good plants by the Autumn following, when about September or October they may be tranſplanted with balls of earth about their roots to where they are to remain for flowering in the different borders of the pleaſure or flower garden; or ſome in pots.

By SUCKERS.

Several of the perennial herbaceous flower plants ſend up ſuckers or off-ſet young ſhoots quite from the bottom around the outſides, furniſhed with roots below, forming at once tolerable rooted plants. as they may be detached from the parent with fibres to the lower part, ſo as when planted, they will ſoon ſtrike good root and grow.

The ſuckers ariſing in Spring and Summer, when two or three inches growth, may be ſlipped the ſame year or the following Spring, taking them clean off to the bottom with roots. and plant them either in a nurſery-bed, or ſome of the ſtrongeſt at once where they are to remain to flower, and the others in the nurſery-bed, having one ſeaſon's growth, may be tranſplanted with balls into the borders, pots, &c. where they are required to ſtand for flowering.

By

By PARTING the ROOTS.

By parting or dividing the roots into ſeveral ſeparate ſlips, great numbers of the fibrous-rooted herbaceous perennials may be plenteouſly propagated, as many ſorts increaſe by the root into large bunches, ſuch as all kinds of perennial Aſters, Golden-Rods, Perennial Sun-flowers, Campanulas, Polyanthus, Daiſies, and numerous other ſorts, and which in many, they often in one Summer, from a ſingle ſlip of the root, &c. multiply ſo exceedingly from its ſides, as by the ſucceeding Autumn, to afford a conſiderable increaſe of roots, ſlips, or offſet young plants, either wholly roots, or roots and top together, fit for propagation where required, and the work of parting or dividing them is eaſily and expeditiouſly effected; and, as in this method of propagation each ſlip being furniſhed with roots more or leſs, they at once form already-rooted young plants, that, in many ſorts, will flower the enſuing flowering ſeaſon.

Obſerve, that as in the herbaceous fibrous-rooted tribe there are both deciduous and evergreen kinds, the deciduous ſorts after they have done flowering, not only have their flower-ſtalks decay, but alſo their leaves in Autumn, that only the root underground remains, and crown buds of the future leaves and ſhoots; and the evergreen kinds, after the flower is paſt, retain their leaves in a tuft ſitting on the crown of the root, as in Auriculas, Polyanthus, Pinks, Thrift, Campanulas, Daiſies, &c. ſo that in parting the roots of the deciduous kinds in Autumn, Winter, or early in Spring, when deſtitute of leaves, the ſlips or divided parts will conſiſt only of roots, with the crown buds at top of the future ſhoots aforeſaid; and in dividing the ever-

green

green tribe, muſt ſeparate them with part of the head of leaves, where practicable, to each ſlip.

The ſeaſon for dividing the roots, is either in Autumn, after the plants have finiſhed their Summer's growth; or in the Spring before they begin to ſhoot; if in Autumn, about from the middle or end of September, and in October and November, is the proper time; and in Spring, February, and March, is the period for performing this work, or at leaſt not later than April, or before they have ſhot at top any thing conſiderably, or at leaſt before they puſh their flower-ſtems for flowering.

As to the method of performing the work of parting the roots, it may be effected either by taking the whole root out of the ground, and ſo divide it into as many ſeparate rooted ſlips as it admits of, or may part the outſide off-ſets as the main root remains in the ground, as ſhall ſeem convenient for any particular ſort; obſerving, in dividing or ſlipping them by either method, that in parting any large ſtrong roots which firmly adhere, may uſe a knife, or even a ſpade occaſionally, to ſeparate ſuch as are ſtrongly fixed, but in the more ſlender roots, they, when taken up for parting, may, in many ſorts, be readily divided with the thumb and finger; being, however, careful in general, in each method, that in parting, to ſlip them quite to the bottom, and not too ſmall, each ſlip with a portion of root; and of thoſe furniſhed with a top or head of leaves, take root and part of the top of leaves together, as far as is practicable; and neither of the ſorts, *i. e.* deciduous or evergreen kinds, ſhould be parted into too ſmall ſlips, except in any particular curious or ſcarce ſorts, where as large an increaſe as poſſible is required.

When thus parted or divided into ſeparate ſlips, may plant the larger ones at once where they are to remain for flowering, either in beds, borders, ſhrub-

ſhrubbery clumps, &c. and the ſmaller ſlips plant in nurſery-beds, in rows ſix inches aſunder, to have a Summer's growth or more, then tranſplanted with balls where they are deſigned to flower, &c.

Obſerve, if any plants afford increaſe of the root but ſparingly, and of ſuch as ſhoot up ſtems, that by cutting down the ſtems early in Summer to prevent their flowering, it will encourage the bottom to emit off-ſets in the root.

By CREEPING-ROOTS.

Several ſorts of perennials creep conſiderably by the roots running in thick ſhoots under the ſurface, as in Mint, &c. and by which they propagate exceedingly; and in Autumn or Spring, may take up ſlips, or cuttings of the ſaid creeping roots, and plant them where wanted; they will grow and multiply very faſt.

By ROOTING-SHOOTS.

Some trailing perennials, proſtrating their ſhoots along the ſurface of the earth, emit roots therein in Summer, and which may either then, or in Autumn, &c. be ſlipped or cut off with roots to each cutting or ſlip, ſo as at once to form proper rooted plants, and plant them in a nurſery-bed, or where they are to remain.

By LAYERS.

By layers of the young ſhoots of the year in Summer, ſome of the more curious ſorts of fibrous-rooted perennials are propagated, ſuch as the fine

Double

Double Carnations, Double Clove Carnations, Double Sweet Williams, &c. as they ſeldom increaſe properly by the root as to furniſh rooted off-ſets or ſlips, or admit of parting the roots; ſo that all the double varieties of theſe ſorts are moſtly propagated by layers, and the plants will have formed proper ſhoots of the ſame year's growth, of eligible ſize for laying in June and July, and beginning of Auguſt; and all of which will root in ſix weeks, fit for planting off from the parent plant, and will flower the year following.

To all the fine Carnation tribe and large Double Sweet Williams, this method is particularly adapted, and the layers ſo raiſed, retain all the properties of the parent in reſpect to colour, variegations, and doubleneſs, &c. of the flower.

For the purpoſe of performing this method of propagating herbaceous flowers, be provided with a ſharp pen-knife, for trimming and ſlitting the layers proper for laying, a quantity of ſmall hooked ſticks ſuch as may be cut out of an old birch broom, or any ſmall bruſh-wood, dried fern, &c. with which to peg down the layers ſecurely in the earth, and a quantity of light rich mould in a wheel-barrow or baſket for raiſing the earth about the plant occaſionally a proper height for the reception of the layers, and for earthing over the layers when layed.

The method of performing the laying is as follows:

In Summer, towards the latter end of June, or any time in July, or beginning of Auguſt, when the ſhoots of the year are advanced to a proper growth, being from four, five, or ſix, to ſeven or eight inches long, which are to be layed as they grow on the plants, and to remain affixed thereto till rooted in the ground.

Thus far obſerved, begin the work by firſt clearing away all weeds about the plants, and looſen the earth

 a lit-

a little around them, and if the ſurface is low, add ſome mould thereto ſufficient to raiſe it high enough to receive the layers eaſily; then begin the laying the ſhoots one by one, ſtrip off the lower leaves ſo as to have ſome inches of a clear ſhoot below, and trim the top leaves ſhorter and even, and then ſlit or gaſh the ſhoot on the under ſide, in doing which, fix on a joint about the middle of the ſhoot underneath, and with your ſharp knife cut half through the joint, and ſlanting upwards ſo as to ſlit the ſhoot up the middle half an inch or but little more, which done, directly lay it, by bending it down to the earth with the gaſh or ſlit part open, making an opening in the earth and peg it down with one or two of the ſmall hooked ſticks, and earth over the body of the layer an inch or two deep, ſtill keeping the ſlit open and the top raiſed gently upright, preſſing the earth moderately about them; and in this manner proceed with laying all the ſhoots on each plant, and when all are layed, give a gentle watering to ſettle the earth cloſe about the layers; and repeat it frequently in dry weather.

They will ſoon emit roots at the gaſh or ſlit part, generally at the bottom of the tongue; and in five or ſix weeks will often be well rooted, fit for ſeparating and planting off from the parent, ſo that when they have been about five, ſix, or ſeven weeks layed, you will examine the progreſs they have made in rooting, by opening the earth gently about ſome of the layers, and as ſoon as they appear to be tolerably rooted, let them be cut off from the old plant with a ſharp knife, in order to be planted out timeouſly in nurſery-beds, that they may root more abundantly, and get due ſtrength before Winter; obſerving, in cutting them off from the mother plant, to open the ground, ſo as to take them up with all the roots they have made, and cut them clean off beyond the gaſh, afterwards trim off any naked woody part at bottom, but preſerve all the roots, and trim the

the long tops a little, then plant them in nurſery-rows, ſix inches aſunder, or may prick ſome in ſmall pots, one layer in each; giving water directly at planting, and repeat it often in dry weather till they take good root and grow freely; keeping them clean from weeds.

They, by October, will grow good ſtrong plants, according to their nature of growth, when a quantity of the choiceſt ſorts of Carnations, &c. may be planted in pots, to move under occaſional ſhelter in time of ſevere froſt, and for which purpoſe may either uſe ſmall pots, (32s) to contain them all Winter, or plant them in large pots (24s or 16s) to remain to flower; obſerving to take them up out of the nurſery-beds, for potting, &c. with a garden trowel, each layer with a good ball of earth about the roots, and having the pots ready, placing a ſhell over the holes at bottom, and put ſome good, light, rich earth therein, plant one layer with its ball about the roots entire, in each pot, fill up with more earth, and give ſome water; may alſo at the ſame time plant ſome of the more ordinary or common ſorts into the flower-borders or beds, to ſtand the full weather all the year; but the choicer ſorts in the pots, may, in November, be placed cloſe together, either in a garden-frame, to have occaſional protection of the glaſſes, or mats, in ſevere froſt, and have the full air in all open weather and mild days, or may be plunged in a raiſed bed of any dry compoſt, raiſed ſome inches above the common level, and arched over with hoop-arches, in order to be protected with occaſional covering of garden mats when hard froſts prevail; but, in either method, be ſure to expoſe them fully in all open weather, as aforeſaid.

In the Spring, ſuch as have remained all Winter in ſmall pots, ſhould, in February or early in March, be turned out with the ball of earth about the roots,

and planted into larger pots, to remain for flowering, giving proper waterings; and those which were potted at once into large pots in Autumn, should now have the earth stirred at top, taking out some, and fill up with fresh good earth, and give a little water.

The layers planted in the common borders of the pleasure and flower garden, require no other care than keeping them clean from weeds, and tying up the flower-stalks to sticks, when they are advanced long enough to require support.—See the *Spring and Summer work of the pleasure ground.*

By CUTTINGS.

By cuttings of the flower-stems arising immediately from the root, several of the fibrous-rooted perennial tribe, are occasionally propagated in default of other means besides seed, such as the Double Lychnideas, Double Scarlet Lychnis, Double Rockets, and some other double flowered, or other curious or desirable sorts, which sparingly afford off-sets or slips of the root, &c. and producing tall thickish-jointed flower-stalks, which, while quite young and tender, being cut off in lengths and planted, will grow.

Let this be done in May and June while the stems are quite young, about half grown, cutting off a quantity to the bottom, and divided into lengths of two or three joints each, then planted in a shady border, two parts of three in the ground, and often watered; and if covered close down with a hand-glass, they will more expeditiously emit roots below and shoots at top, and form good plants by Autumn following; observing, when they begin to shoot at top, those covered down with glasses, should be allowed the free air, by first tilting up the glasses, then

then by degrees taken wholly away, to give them full air to ſtrengthen their growth.

But beſides the cuttings of the flower-ſtalks, ſome ſorts will alſo grow by cuttings of the young ſide-ſhoots or heads, ſuch as thoſe of Pinks, &c. which in June and July the ſhoots of the year will be of a proper ſize to cut off about two or three inches long, ſtripping the leaves off the bottom, and cut the top ſhort and plant them in fine light earth, as directed below, under the article propagation *by pipings*, and managed in the ſame manner, they will grow.

By PIPINGS.

By pipings or heads of the young ſhoots of the year, of Pinks particularly, drawn out of the ſocket or pipe, in lengths of two or three inches, or cut off that length, and planted, and cloſe covered with a hand-glaſs, they will readily grow the ſame year, and produce flowers the year following.

This method of propagation is peculiarly calculated for Pinks, and by which any deſirable ſorts may be numerouſly raiſed very expeditiouſly, the pipings or cuttings will root and form proper growing plants in ſix weeks; and the proper ſeaſon for performing this operation is in June and the early part of July, when the ſhoots of the ſame year will be of from three or four to five or ſix inches long, proper either for drawing out of the ſockets as pipings, or cut off with a knife at a joint, as cuttings, though both methods, by the general propagators about London, are indifferently called piping.

But the denomination of piping firſt originated from the method uſed formerly, in detaching them for planting, which is by holding the bottom of each ſeparate ſhoot intended, with one hand, while with

the other, having the top between the finger and thumb, and pulling the ſhoot, it will readily come out of its ſocket leaving a vacancy like a pipe, and then trimming the part thus detached, by ſtripping off the lower ſtraggling leaves, cut the bottom part even to the loweſt joint, and trim the top ſhort, ſo as each piping be about two or three inches long; and having prepared ſome fine ſifted or well-broken earth, and the top ſmoothed, plant the pipings, by thruſting them into the earth an inch or two aſunder, and to within an inch of the top, give a good watering, and cover the whole cloſe with one or more hand-glaſſes.

And the method of piping by cuttings, is now the moſt generally practiſed, which is, that inſtead of pulling off the piping or ſhoot, as above, cut it off at a joint with a knife, generally at, or a little below the middle, trimming off ſtraggling leaves and ſhorten the top, ſo as the cutting is not above two or three inches long, as above obſerved, and having prepared a bed of fine light earth, and the ſurface made very ſmooth, plant the cuttings by thruſting them into the earth, within an inch of the top, and one or two inches aſunder, giving directly a proper watering out of a watering-pot with the roſe on, and cover them down cloſe with a hand or bell-glaſs.

In both the above methods of piping, let the glaſſes remain conſtantly over them till rooted, to exclude the external air; giving waterings according as the earth dries, and a ſlight ſhade juſt in the middle of ſunny days, and they will thus ſoon emit roots below and ſhoots above, ſo as in two months they will require to be thinned and planted out in nurſery-rows, ſix inches aſunder, there to remain a year to gain proper ſtrength, then tranſplanted where they are to ſtand to flower.

By

By HEADS.

By heads arising in a robust, short, tufty, or bunchy growth, from the sides of several sorts of plants, as in House-leek and many other of the succulent tribe, and in which, some produce them near the ground, furnished more or less with roots; and others growing higher on the plant, or on the sides of the stem and branches, where any, without roots, yet when detached at the proper season and planted, will grow.

The proper season for taking off and planting them, is principally in the Spring and early part of Summer, or in August and September, slipping them off with the hand, or cut off with a knife, as shall be convenient, and plant them in the shade, especially those without roots; give water at planting, and till rooted, and begin to grow.

By RUNNERS and CREEPING-SHOOTS.

By runners or long slender creeping young shoots and strings, extending prostrate along the surface of the earth and rooting therein, several of the herbaceous fibrous-rooted perennials propagate very fast; such as in Strawberry, &c. which push forth many long, small, stringy shoots in Summer, of many joints, and at each joint emit roots in the ground, and a small head of leaves, &c. above, so forming a distinct young plant at every joint as they extend in length along the earth, fit to detach for propagation in June, July, August, and September, but if planted off in June and July, they will make stronger and finer plants.

When

When therefore it is designed to propagate Strawberries or any other plants of the running tribe by runners, may perform it as soon in the Summer as they have shot into lengths of two, three, or more joints, each rooted in the earth, and formed heads above at each joint, especially such as form heads, as in Strawberries, &c. cutting off the runner close to the mother plant, and take them up with all the roots they have made, divide and trim them into separate rooted plants, and plant them in a shady border, in rows six inches asunder; giving water at planting, and afterwards occasionally till they have taken good root, and they will thus make strong plants by September or October.

Other running plants, having the runners or creeping-rooting shoots emitting roots in the earth all the way their whole length as they shoot forth, and which may be detached and cut into lengths, and planted in a shady border, or in beds.

The Season, Method, and Order of Planting this Class of Plants.

HAVING explained the different methods of propagating this class of herbaceous, fibrous, and fleshy-rooted perennials and biennials, we now proceed to exhibit the general practical directions concerning the proper season, method, and order of planting the different sorts, and management throughout the year.

The compartments in which to plant the various sorts of hardy fibrous-rooted perennial flowers, may be both in spacious borders, along the boundaries of lawns and grand walks, both of straight walks, and

and thoſe in the ſerpentine way, and in ſhrubberies, in the clumps and other compartments between the ſhrubs, towards the front; alſo in beds, diſpoſed together in the flower garden way, ranging parallel to one another; firſt, having an outward border continued all round next the ſurrounding main walk, and within this border have the ground laid out in three or four-feet-wide beds diſpoſed parallel, as above, with alleys eighteen inches or two feet wide between the beds; or, for variety, may have diviſions of flower ground planned in the parterre-way, or any fancy figure; and, in either method, have the borders and beds either neatly edged with Dwarf Box, or Thriſt, ſome with Pinks, Daiſies, &c. as formerly obſerved, or others not at all, in default of edging plants; have only the edge, worked up firm and ſtraight.

The borders, beds, and other compartments deſigned for the reception of the flower plants, ſhould be digged at the proper planting ſeaſon, either in Spring or Autumn, ready for receiving them in the order required.

The general ſeaſon for planting a collection of this tribe of fibrous-rooted perennials, is both in the Spring and Autumn; if the Spring ſeaſon is moſt convenient, February and March is the principal time for making the general plantation, before the plants begin to ſhoot; though, where planting at the above time has been omitted, may alſo plant many ſorts in April, &c. ſuch that have not advanced very conſiderably in the Spring ſhoot, eſpecially if removed with balls of earth about their roots; and for Autumn planting, the proper time is October and November, or in many hardy kinds, they may be planted almoſt any time, in open weather, during the Winter; and eſpecially, as before obſerved in late Spring planting, as the greater part of the fibrous-rooted tribe may be readily tranſplanted with balls.

Moſt

Moſt of the fibrous-rooted tribe will ſucceed by removal, both when of a ſmall and large ſize; except in ſome particular ſorts that have long, naked, woody roots with but few fibres, ſuch as Stock-Gilliflowers, &c. which require to be planted out finally while the plants are young, they being raiſed from ſeed in Spring, ſhould be planted out to remain in July, Auguſt, and September following, while the roots are of a fibrey nature, before they become hard and woody, in which they will not root freely; but in moſt others, as having a good ſpread of fibres, they will tranſplant ſucceſsfully in ſmall or large plants, as above ſuggeſted, and as may be required; though it is more eligible to plant all ſorts out finally while of a moderate growth, and they may be moſtly taken up for planting with a ſmall ball of earth about their roots, ſo as not to feel any check by removal.

In planting them, let thoſe of tall growth be planted the moſt backward in the borders, &c. and the others in a regular gradual order of height, to the loweſt next the walks or alleys, &c. and the different ſorts, ſo diſtributed, as they may effect both a conſpicuous diverſity in their different flowers, and afford a conſtant ſucceſſion of flowering throughout the ſeaſon, from the earlieſt Spring flowers to the lateſt Autumn bloom; as a regular ſucceſſive blow may be obtained almoſt the year round, from January, in the bloom of the Winter Aconite and Chriſtmas-Roſe, &c. ſucceeded by a vaſt variety of other ſorts as the Spring and Summer advances, till November or December, in the lateſt flowering Aſters, &c.

Obſerving, that in the planting the various ſorts, to diſpoſe them ſingly at eligible diſtances, no two ſorts of the ſame kind too near together, but diverſified in the order above adviſed, nor let thoſe of different kinds be nearer than from one to two or three

three feet asunder, according to their growth; having a hollow garden trowel, scoop-fashion, with which both to take up the plants for planting, with balls, when required, and to open apertures in the earth, one for the reception of each plant, which place with the crown of the root an inch or two below the surface, drawing the earth evenly about the roots, and close about the crown of them and body of the plant; and in the Spring planting, or early in Autumn, if the ground is light and dry, and dry weather withal, let each plant have some water to settle the earth close about the roots, and to promote their fresh rooting more expeditiously in their new quarters, repeating it as occasion may require, in the late Spring planting particularly, till they begin to grow freely.

After being thus finally planted, most of the perennial sorts may remain unremoved several years, or some sorts, when much increased at bottom, it may be proper either to take them up to slip them smaller, or trim them in around as they remain in the ground.

As to the general culture of this class of flowering plants, after being finally planted where they are to remain, that as in most sorts the same plants may continue unremoved several years, the general care consists principally in keeping them clean from weeds all Spring and Summer, supporting the flower-stems of tall-growing plants, cutting down the decayed flower-stalks when done flowering, and of digging the borders, &c. annually in Autumn, Winter, or Spring, between the plants in general; also occasionally to trim or slip such plants as increase into considerable bunches; observing the particulars as below.

The keeping the borders, &c. in which the plants are deposited, clean from weeds and perfectly neat, should be well attended to all Spring and Summer, by hoeing the ground in dry weather when

when weeds advance, and hand-weeded occasionally as may be required; and afterwards, if room between to admit a small rake, let the ground be neatly raked, clearing off all the hoed-up weeds and other rubbish, and leave a clean smooth surface.

The supporting of the flower-stems of such plants as run up tall and require support of sticks to secure them from being overturned by tempestuous winds and hard rains, is most necessary work, and should be early attended to, whilst such as naturally grow erect maintain their upright position, and those of the climbing tribe, before they have advanced long and straggling, always proportioning the length of the sticks to that of the natural height of the different plants, not having sticks taller than the stems of the plants they are to support, and generally as concealed from sight as possible, and the stems of the plant tied thereto in the neatest manner.

According as the different plants have done flowering, and their stems decay, cut down all decayed parts, that the plants either in flower, or that are advancing into bloom, may appear to proper advantage; and in Autumn, when the general bloom is over, let all the stems and flower-stalks be wholly cut down close to the bottom, or to whence they proceed, and clear off all decayed leaves and rubbish, and hoe up all weeds, and rake the surface neat and clean; then the ground may either be digged neatly between the plants, or in the Spring, about February or March.

When any of the plants have grown into considerable bunches, so as either to over-run their allotted limits, appear unsightly, or crowd too much on the adjoining plants, or upon one another, they should be regulated, either by trimming them in around as they remain in their growth, or by slipping off the outward increased parts with the hand, knife, or spade, &c, as shall be most convenient,

nient, or as the plants admit; or take them wholly up, and divide them into ſmaller portions, planting the beſt again directly; obſerving, the proper ſeaſon for this work, is either in the Spring, before the plants begin to ſhoot conſiderably, or in Autumn, after they have done flowering, about September, October, and November.

Thus far is principally all that is neceſſary to obſerve concerning the utility, nature, propagation, and general culture of this extenſive claſs of herbaceous fibrous-rooted perennials and biennials in the pleaſure ground and flower garden: the following is ſome general hints on the method of blowing any particular ſorts early, by artificial heat in hot-houſes, hot-beds, &c.

Of Forcing any deſirable Plants of this Claſs to an early Bloom, in Hot-houſes, Hot-beds, &c.

IF an early bloom forced by artificial heat is required, of particular deſirable ſorts of the herbaceous fibrous-rooted perennial flowers, either for their fragrance or ornament, it is eaſily effected where there is the accommodation of a hot-houſe or pine-apple ſtove, or any kind of forcing department, under glaſſes, &c. having the plants of the ſorts intended planted in pots, and in December, January, February, March, &c. carry ſome into the pinery, or any ſtove or forcing-houſe at work, they will flower in good perfection early in Spring and Summer, one or two months earlier than their common ſeaſon; and, by having a freſh ſupply ready potted, to take in after one another, a ſucceſſional blow may be obtained until the flowering of the ſame ſorts of plants in the natural ground.

By this method may have a fine early bloom of Pinks, Carnations, Sweet-Williams, and any other desirable kinds, though will be in greater perfection in such as naturally blow moderately forward, either in the Spring or Summer season, than of the late autumnal-flowering kinds; however, any sorts noted either for their fragrance or beauty of flowers, may be admitted in the collection for forcing, both of the fibrous, bulbous, and tuberous-rooted tribe. —See the *bulbous-rooted plants*.

Such plants of the fibrous-rooted tribe as grow in the full ground, and designed for forcing, as Pinks, &c. may be taken up for potting either in Autumn, about October, November, &c. for a full supply, or even in Winter, in open weather, and early in Spring, taking them up clean with a full ball of earth about the roots, and plant them in the pots with the balls entire, and give them water; and as soon as potted place them in some sheltered place, either under a garden-frame and glasses, or close under a warm south wall till wanted to carry into the hot-house, &c.

They may be brought into the hot-house, &c. by degrees, some of the earlier-blowing kinds in December or January, others in a larger supply in February, March, or April, as required to blow earlier or later, or in succession, &c. that when you would have them blow as forward as possible, plunge the pots into the bark-bed, if room enough; others place towards the glasses; and give them necessary waterings, and air in common with the other plants, as directed under the articles hot-house, stove, or forcing-houses, &c. both in this and the first volume, and they will grow freely and flower at an early season, exhibiting an acceptable varity when flowers are scarce.

ARRANGE-

ARRANGEMENT

OF THE

BULBOUS-ROOTED FLOWERS,

AND

METHOD OF CULTIVATION.

THIS arrangement compriſes a collection of all the bulbous-rooted ornamental flowering plants for the pleaſure ground and flower garden, being ſuch as have oval or roundiſh ſwelling bulbous roots, compoſed ſome of many involving coats, as in the Tulip; others of numerous thick, ſucculent, imbricated ſcales lying over each other, as in the Lily; each ſort being of a perennial ſtate, but annual in ſtalk, which always riſe in the Spring, Summer, or Autumn, according to the ſorts, flower the ſame year, produce ſeeds and die to the root ſoon after, and at which time the bulb, or root, being at its ultimate degree of growth for the ſeaſon, generally increaſed into ſeveral off-ſet childing bulbs, or young plants, all of which, together with the parent, when the flower-ſtalks decay, ceaſe growing, their fibres decay and draw no nouriſhment from the earth, remaining in

an inactive ſtate for a certain time, and during this period of reſt, before they emit freſh fibres and commence a new vegetation, is the only proper period for removing roots of all bulbous and tuberous flowers, both to ſeparate their increaſed parts, or off-ſets, when neceſſary, and for propagation, and to tranſplant them into freſh-prepared beds or borders, &c. as well as to reſerve ſome capital bulbs out of the ground for Autumn and Spring planting, or for ſale, or to ſend to any diſtance when required, as they will bear being kept out of the ground ſeveral months.

For it is peculiar to the bulbous tribe, and moſt of the tuberous kinds, that being taken up at the above period of reſt, ſoon after the flower fades and the leaves and ſtalks decay, they will keep good in a proper vegetative ſtate for ſeveral months if required, or may be planted ſoon after, or retained for planting in Autumn, Winter, and Spring, when the ground can be more conveniently prepared for their reception; as alſo ſome capital ſorts to plant at different intervals, of two or three months diſtance of time, to obtain a longer ſucceſſion of bloom in Spring, Summer, &c.

Bulbous plants differ from tuberous kinds, in that the former being compoſed moſtly of the rudiments of leaves in a ſwelling bulbous form, incloſing the embryo of the future ſhoot; and tuberous plants have the root formed of an entire, ſolid, fleſhy ſubſtance, as in Anemone, Cyclamen, Bulbous-Fumatory, &c.—— See *tuberous-rooted flowers*.

There are two principal kinds of bulbous roots, viz. tunicated, or coated bulbs, and ſquamous, or ſcaly bulbs; the former are compoſed of ſeveral tunics or coats, cloſely involving each other, as in the Hyacinth, Tulip, &c. and the latter conſiſts of many fleſhy ſcales lying over one another as in the Lily; each of which bulbous claſſes, compriſing bulbs

bulbs of various ſizes and ſhapes, from the bigneſs of a nut to that of a man's fiſt, or more, ſome roundiſh, others oval, oblong, &c. and all of a perennial growth, multiplying exceedingly by off-ſet young bulbs annually, for increaſing and perpetuating the ſpecies, proper for ſeparation every year or two, in Summer, as ſoon as the flower is paſt; each off-ſet forming a diſtinct new plant; producing flowers in all reſpects like the parent; and new varieties are obtained by ſowing the ſeed.

Moſt of the bulbous plants produce ornamental flowers, and many of them of ſingular elegance, flowering principally in the Spring and early part of Summer, and ſome ſorts in Autumn, as Colchicums and Autumnal Crocus; and ſome ſorts of Amaryllis, as the Guernſey and Belladonna Lily, having all great merit for ornamenting the pleaſure ground and flower garden; diſpoſed in any of the open borders or beds of common earth; ſome in continued rows, others depoſited in little clumps, of from three or four to five or ſix roots together, in patches about the borders, in aſſemblage with the fibrous-rooted flower plants: but ſome of the capital kinds of high-priced bulbs, and all thoſe which are held in high eſtimation as fancy or prize flowers; ſuch particularly as the Hyacinth, Tulip, Polyanthus-Narciſſus, are always planted in three or four-feet-wide beds by themſelves, and in rows nine inches aſunder: and the more valuable ſorts are generally afforded occaſional protection of mats, &c. both in Winter, from ſevere froſts, and in Spring, when in flower, to preſerve the bloom longer in beauty.

The arrangement of this claſs is alſo according to the botanic names of the families or genera; and the ſpecies in each genus or family are diſtinguiſhed by the Engliſh name, &c. as below.

ALBUCA—*Baſtard Star of Bethlehem*——Major, or Greater—Minor, or Leaſt.

ALLIUM—*(Garlick) Moly*—Yellow Moly—Hairy White——Old Narciſſus-leaved——Great Broad-leaved Purple—*Flavum*, or Straw-coloured——Roſaceous Starry Purple—*Victorialis*, or Broad Elliptical-leaved—Canada Bulb-bearing, or Tree Onion.

AMARYLLIS—*Lily Daffodil*—Yellow Autumnal—Spring-flowering Yellow—Belladonna Lily—Guernſey Lily.

BULBOCODIUM, or Spring *Colchicum*—Vernal, or Spring-flowering.

CROCUS—*Crocus*, or Saffron; compriſing many varieties of Spring and Autumnal-flowering kinds, as follows:

Vernal, or Spring Crocus, viz.

Yellow-flower kinds——Large Yellow——Common Small Yellow——Golden Yellow——Cloth of Gold, or Yellow Black-ſtriped—Yellow Purple ſtriped.

Blue-flowered kinds——Large Deep-blue——Small Blue—Blue Purple-ſtriped—Blue Violet-ſtriped—Pale-blue.

White-flowering kinds——White-flowered——White Purple-ſtriped—White Purple-bottomed—White Black-ſtriped, or Large Scotch Crocus—Cream-coloured—Aſh-coloured—White Blue-ſtriped—White Violet-ſtriped.

Purples—Large Purple—Small Purple——Striped-Purple—Many-flowered Purple Violet-ſtriped.

Autumnal-

Autumnal-flowering Crocus—The White-flowered—Blue-flowered——Purple-flowered——Yellow-flowered—Many-flowered.

Officinal, or Saffron Crocus—Blue Purple-flowered, with reddiſh golden *ſtigma*, which is the Officinal Saffron.

FRITILLARIA——*(Fritillaria)*——Chequered Tulip, and Crown Imperial, viz.

Fritillaria kinds——1. Common, with chequered-flowers, many varieties—Dark-purple Yellow-ſpotted—Great Yellow—Dark Yellow—Variegated Yellow—Black-flowered—Red-flowered—White-flowered—Spotted-flowered—Umbelliferous-flowering—Double-flowered.——2. Pyrenean Alternate-leaved, many varieties, as above.——3. Perſian *Fritillaria*, or Perſian Lily—the Tall Pyramidal-flowering——Lower Branching-ſpiked.

Corona imperialis, or Crown Imperial kinds—Common Duſky-red—Yellow-flowered—Bright-red—Golden Yellow—Yellow-ſtriped——Double-Crown, or with two tier of flowers——Triple-Crown, or with three tier of flowers—Double-flowered of each variety—Gold-ſtriped-leaved—Silver-ſtriped-leaved.

GALANTHUS—Snow-drop—Common Single—Semi-double—Full-double.

GLADIOLUS—*Gladiole*——Sword Lily, or Corn-flag—Common Red, Purple, White, Crimſon-flowered.

HELLE-

HELLEBORUS *hyemalis*—Winter Aconite.

HYACINTHUS—*Hyacinth*—1. Oriental, or Eastern Hyacinth, numerous elegant varieties of whites, blues, reds, purples, flesh-colours, yellows, &c. double and single of each.——2. Grape, or Clustered flowered, White, Blue.——3. Feathered Hyacinth—4. *Muscaria*, or Musk Hyacinth, Blue, White.——5. Comose, or Tufted Hyacinth.——6. Nodding-spiked Hyacinth—Wood Hyacinth, or Hare-Bells.

IRIS—*(Iris)*—comprising several bulbous species, viz.—1. *Xiphium*, or Common Bulbous *Iris*, many varieties of Blues, Violets, Whites, Purples, Yellows, Blue and Whites—Blue and Yellows, and Striped-flowered——2. Persian Iris, with elegant variegated flowers.—3. *Sisyrinchium*, or Double Bulbous Iris, Blue, Yellow.

IXIA—*Ixia*—Bulbous *Ixia*, White and Yellow, Purple and Yellow, Blue and White——Entire White, and Variegated-flowered.

LEUCOJUM—*Greater Snow-drop*—Spring-flowering—Summer-flowering—Autumnal-flowering.

LILIUM—*Lily*——Common White Lily—Dependent-flowered White——Broad-stalked Multiflorous White—Double-flowered White—Striped-leaved White—Orange Lily—Bulbiferous Orange Lily—Fiery Bulbiferous Orange Lily.

Martagon Lilies, having all the petals or flower-leaves rolled back, and the flowers also reflexed—Common Old Martagon, or Turk's-cap, with purplish black-spotted flowers——Red-flowered and

and Double-flowered——Pompony Martagon, the red, white, ſpotted, and double——Superb, or Great Yellow Martagon——Chalcedonian Scarlet Martagon—Canada Spotted Martagon.

NARCISSUS—*Narciſſus*—Daffodil and Jonquil—1. Common Yellow Daffodil, the Pale-yellow, Deep-yellow—Yellow and White—Golden cupped——Long-tubed, Short-tubed, Semi-double-flowered, Full-double—2. Poetic, or Common White Narciſſus, with yellow-cupped flowers, purple-cupped, double-flowered——3. Hoop-petticoat Yellow Narciſſus.——4. Two-coloured Incomparable Narciſſus, ſingle and double-flowered. ——5. Late White Narciſſus.——6. Odoriferous Starry-yellow.—7. Minor Yellow Winter Daffodil.—8. Polyanthus Narciſſus, or Multiflorous Daffodil, producing many flowers from the ſame ſheath, compriſing ſuch as Entire Whites, white petals and yellow nectariums, or inner cups; White, with orange cups; White, with ſulphur cups; Entire Yellow; Yellow, with orange cups; Yellow, with ſulphur cups, and Double-flowered of each.

Narciſſus Jonquilla—Jonquil, or Ruſh-leaved Multiflorous Daffodil—Minor Yellow Jonquil—Major Yellow Jonquil—Starry Jonquil—Yellow and White—White-flowered—Semi-double——Full-double—Large Inodorous Double, all of the Multiflorous tribe, producing from two or three, to ſix or eight flowers from the ſame ſheath or *ſpatha*.

ORNITHOGALUM——*Star of Bethlehem*——Pyramidal Large White Starry——Pyrenean Whiteiſh Green——Yellow-flowered——Umbelliferous-flowered——Broad-leaved Arabian——Nodding-flowered.

PANCRA-

PANCRATIUM—*Pancratium Lily*, or Sea Daffodil —Maritime Large White.

POLYANTHES——*Tuberose*——Common Single White—Double White—Gold-ſtriped-leaved.

SCILLA—*Squill*, or Sea Onion—Common Maritime—Amoenous, or Delicate Byzantine Blue-Squill—Peruvian Conical White-flowered, Blue-flowered——Italian Blue Hemiſpherical-flowered —Bifoliated, or Two-leaved, the White-flowered, Blue-flowered—Unifolious, or One-leaved White —Autumnal-flowering——*(Lilio-Hyacinthus)* Lily Hyacinth, or Squamous-rooted Squill.

TULIPA—*Tulip*—conſiſting of innumerable varieties of early and late kinds, viz.

Early kinds, low growers—Conſiſting of White and Red-ſtriped——White and Purple——White and Roſe-coloured, many varieties, the principal of which have names given them according to the fancy of the floriſts, ſuch as the Early Van Toll, Early Claramond, Grand Duke, Golden Sceptre, and numerous others, as may be obſerved in the ſhop catalogues, where they may be obtained in great variety.

Late kinds, tall growers and large flowers—Compriſing ſeveral hundred varieties of different colours, ſtripes, and variegations, divided by the floriſts accordingly into claſſes, viz. *Bizarres*, or Fancy Tulips, with yellow grounds variouſly ſtriped with black, purple, red, brown, violet, olive or orange, &c —*Byblomon*, or white grounds, ſtriped variouſly with black, brown, violet, red, or crimſon and red, &c.—*Baguets*, finely ſtriped with different colours.

All

All the foregoing collection of bulbous flower plants are perennial in the bulb, or at least, it multiplying exceedingly by a progeny of off-sets annually, it perpetuates the species from year to year, and greatly increases the store; for, although the same individual bulb exists but for a certain time, some not more than a year, as in the Tulip; others several years, they all, previous to their dissolution, afford from their sides a supply of off-set suckers or young bulbs to continue and increase the respective kinds, so as that at the end of many years, what is often considered as the same individual root, is, in reality, another produced from the off-set progeny of the parent, as above; each, however, retaining all the properties of the mother plant, producing the same sorts of flowers: some bulbous plants also produce many young bulbs on their flower-stems at top and sides, as in several species of *Allium*, &c. hence denominated bulbiferous bulbs: and new varieties of all the different bulbous species, &c. are obtained from seed, producing young bulbs, arriving to a flowering state, some sorts in two or three years, others not in less than five, six, or seven, as in the Tulip.

The season of flowering of bulbous plants, is at different times, from January, February, March, and April, till October or November, but the principal bloom of the capital Spring and Summer sorts, is from March or April, till June and July, and the autumnal-flowering bulbs, such as *Colchicum*, the *Crocus Autumnalis*, Autumnal *Narcissus*, Yellow Autumnal *Amaryllis*, Guernsey and Belladonna Lilies, &c. flower only in Autumn, about August, September, October, &c.

The earliest Spring bulbs are the *Helleborus hyemelis*, or Winter Aconite, Snow-drop, Spring Crocus, Common Daffodil, Early Dwarf Tulips, Early Hyacinths, &c. the former of which flowering in January or beginning of February, the others in February and March, succeeded by the general blow of Hyacinths,

cinths, Narciſſus, Jonquils, Fritillarias, Crown-Imperial, Tulips, Lilies, &c.

Moſt of the Spring and Summer flowering bulbs, produce their leaves and flowers together, and when the flower fades the ſeed-pod advances, ripening ſeed the ſame Summer, then the leaves and flower-ſtems decays, and the bulb ceaſes growing for a certain period, drawing no nouriſhment from the ground; and in this interval of reſt, before they put out new fibres, they admit of being taken up to ſeparate the off-ſets and to be kept out of the ground ſeveral months, if required, till the ground is new digged, in Autumn, Winter, or Spring.

But the autumnal-flowering bulbs, moſtly produce their flowers at one time and the leaves at another, as in *Colchicum*, ſome ſorts of *Amaryllis*, &c. in which the flower-ſtem and flower advances entirely naked or unattended by leaves, and when the flowers decay, the leaves in ſome ſorts iſſue from the root ſoon after, others not till Spring, continuing their growth till May or June, then decay, and the roots are at their full growth, and is the time to take them up for ſeparating the off-ſets, or to tranſplant them, or kept out of the ground two or three months, but muſt be planted again time enough to produce their Autumn bloom.

All the ſorts of bulbous plants of this liſt are for the general part hardy enough to ſucceed in the full ground, in any common ſoil, in beds or borders, though the Guernſey and the Belladonna *Amaryllis* are ſomewhat tenderiſh, require a warm dry border, where they may have occaſional protection from ſevere froſt, alſo from hard rains when in bloom; and ſome ſhould be alſo planted in pots to move under ſhelter occaſionally; and the Tuberoſe ſhould generally be planted in pots, in Spring and early part of Summer, and placed in hot-beds or hot-houſes to forward them more effectually to flowering, afterwards removed to the full air.

The

The general ſeaſon for procuring and planting moſt ſorts of bulbous-rooted flowers, is in Autumn, while the bulbs are out of the ground, they having been taken up in Summer, &c. after their blow was paſt, and the leaves decayed, the root being then done growing, and admits of removal without the leaſt check or injury, to keep till Autumn, &c. when the borders and beds ſhould be new digged for planting them; for bulbs muſt not generally be taken up during their growth; ſo that the planting of the capital ſorts of Spring and Summer-blowing roots, ſhould, for the principal blow, be performed from about the middle or end of September to the beginning, middle, or end of November, for next year's general bloom; finiſhing the Autumn planting before the froſt ſets in: and ſome ſorts may be retained out of the ground till the Spring, in January, or the beginning or middle of February at lateſt, then perform the final planting for ſucceſſional flowering; but as to the autumnal-flowering bulbs, they ſhould always be planted in July or Auguſt, to flower the ſame Autumn, in September and October.

All the ſorts of bulbous flowers may be obtained for planting, at moſt of the nurſery and ſeedſmen's, in full collection, applying for them timeouſly in Autumn, &c.

The borders and beds, where deſigned to plant them, ſhould be neatly digged for their reception, laying them in a gradual rounding form, and rake the ſurface ſmooth.

As to the order of planting, they may be diſpoſed, ſome about the common borders and other compartments of the pleaſure ground, and ſome of the capital kinds of Hyacinths, Tulips, Narciſſus, Jonquils, &c. planted in beds by themſelves, both to have occaſional protection from the weather when in flower, and that they may exhibit a grand blow together; ſome alſo planted in pots and water-glaſſes,

to place in hot-beds and hot-houſes, or any apartment of an houſe, to blow in Winter and early in Spring.

In planting them in the borders, it is adviſable to diſpoſe them moſtly in little clumps, of three, four, or five roots together, having the clumps one or two yards diſtance, all of one ſort in each clump; placing the low early blowers in front, ſuch as the Winter Aconite, Snow-drops, Crocus, &c. the others more backward, according to their degrees of height, having the Crown-Imperials and the White, Orange, and Martagon Lilies, &c. placed towards the middle and back range; performing the planting of the ſmaller kinds by a blunt-ended dibble, therewith planting the bulbs three inches deep, but the larger roots may be planted by making apertures with a garden trowel, &c. three or four inches depth; being careful to intermix the different ſorts in ſeparate cluſters, or in ſingle plants, as to exhibit a proper variety and a conſtant ſucceſſion of bloom in every part.

For planting the capital ſorts in beds, ſhould have beds four feet wide, with two-feet alleys between, forming the beds neat, in a roundiſh moderate ſwelling form, and the edge either planted with Box or Thrift, in neat order; or in default of theſe, beat up the edge ſtraight, firm, and even with the ſpade, and the roots may be planted in rows length-ways the bed, nine inches aſunder, either by dibble, ſix inches diſtant in the row, and three or four inches deep, or may draw drills that depth with a hoe, and place the bulb therein, bottom downward, preſſing them into the ground, and draw the earth evenly over them; or may with a ſpade or rake, trim the earth evenly off the ſurface of the bed, four or five inches deep, into the alley, then place the roots upon the ſurface of the bed the above diſtance, bottom downward, preſſing them a little into the earth, and, with a ſpade, caſt the earth

out

out of the alley over them evenly; and as ſoon as planted, in either of the above methods, rake the ſurface of the bed or border ſmooth.

And the planting in water-glaſſes, for blowing in an apartment of a houſe in Winter and early part of Spring, may be performed any time from October or November till February or March, having proper glaſſes for the purpoſe, formed with large concave mouths big enough each to admit one large bulb, are ſold at the glaſs-ſhops and ſeedſmen's, eſpecially thoſe who deal largely in bulbous roots; and in which may plant Hyacinths, Tulips, Polyanthus-Narciſſus, and other Narciſſus kinds, Jonquils and other Spring-flowering bulbs; fill the glaſſes with ſoft water, and place one bulb in each glaſs, with the bottom to touch the water, they will ſoon ſhoot their fibres down into the water and flower-ſtems above; ſupplying them with freſh water as that in the glaſſes exhauſts.

Alſo may plant ſome roots of Hyacinths, Narciſſus, Early Tulips, Jonquils, or any other, in pots of light dry earth, or ſandy ſoil, in October, November, or any time in Winter, and the pots placed in the inſide of the windows of an houſe, or in a hot-houſe, &c. to blow early.

The capital ſorts, planted in beds in the flower garden, if defended from Winter and Spring froſts in their early growth by a covering of mats over hoop-arches, will be of much advantage, but expoſed fully on days; and when in bloom, the fine Hyacinths and Tulips, if defended with an awning or umbrella of mats, &c. erected over the beds to keep off hard rains and the mid-day ſun, but high enough to admit the morning ſun and full air, and of viewing the flowers, it will preſerve the beauty of the blow much longer.

When they are paſt flowering, and the leaves and ſtalks decay, the roots then ceaſing to grow for ſome time, ſhould then take them up, eſpecially all the capital Hyacinths, Tulips, Narciſſus, &c. every year, both to ſeparate the increaſed off-ſets, and have the beds freſh prepared for replanting them; and moſt other bulbs ſhould generally be taken up once every other year or two, or in three years at moſt, as they will be increaſed into large cluſters, wanting ſeparation; though it is eligible to take up moſt of the principal ſorts annually.

When taken up, let the off-ſets be ſeparated from the large roots for propagation; and ſuch off-ſets as are of ſize enough to blow, ſhould be reſerved among the other large roots, and the ſmall ones kept ſeparate, and planted in beds by themſelves for a year or two, till they acquire a proper blowing ſtate: the other proper blowing roots may be dried and kept until Autumn, for planting as before directed.

When deſigned to raiſe any of this tribe of plants from ſeed, to gain new varieties, it is effected by ſowing them ſoon after they are ripe in beds or boxes of light rich earth, as hereafter; and when the plants come up next year, keep them clean from weeds till they have had two or three years growth, then take them up at the decay of the leaf, and manage them as the old roots.——See the *propagation of bulbs*, next page.

The above arrangement compriſing the hardy bulbous-rooted family, which, though not ſo conſiderable as the fibrous-rooted tribe, furniſhes a grand variety of ornamental garden flowers, many of very great elegance, and have all conſiderable merit for adorning the pleaſure ground and flower garden; and as their propagation is effected abundantly by root off-ſets, and occaſionally by ſeed, and eaſily cultivated in any common ſoil of a garden, they demand univerſal eſtimation as flower plants.—See their culture.

Bulbous

Bulbous roots are commonly conſidered as perennials, or at leaſt they perpetuate their ſpecies by root off-ſets every year, and in ſome ſorts, as the Tulips and ſome others, wholly renew the main bulb, for what is often conſidered as the ſame individual parent root, is a new one formed each year by the chief off-ſet, produced from the old one, which entirely decays annually and always produces one larger ſucker or off-ſet to ſucceed it for flowering the following year, beſides ſmaller ones for increaſe; in other ſorts, the ſame bulb continues many years, furniſhing alſo an off-ſpring of young ſide bulbs for propagation.—See the methods of their propagation and general culture in the proceeding articles, under ſeparate heads:

Methods of propagating the foregoing Claſs of Bulbous Roots.

THE propagation or method of raiſing and multiplying bulbous-rooted plants, is performed occaſionally by ſeed, to gain new varieties; but principally by root off-ſets, or young bulbs of the root, for the general propagation of all the different ſpecies and already acquired varieties, and by which they propagate freely in great abundance annually: and ſome ſorts alſo by bulbs produced on the ſides and top of the flower-ſtems.

Firſt, by SEED.

But the different varieties of the ſeveral ſpecies were all firſt obtained from ſeed, and by which the

varieties of ſeveral ſorts are increaſed very conſiderably, ſuch as in Tulips, Hyacinths, Polyanthus-Narciſſus, Fritillarias, Crown-Imperials, Colchicums, Crocus, and ſome others, and whoſe varieties, in the two former particularly, amount to ſome hundreds, and additional new ones are annually obtained by the floriſts, who ſow ſome ſeed every year for that purpoſe; and when any new varieties are thus obtained, poſſeſſing good properties, they are increaſed and continued always the ſame, by propagating them by off-ſets of the root, which always produce flowers alike in all the properties to the parent variety; and thus they are multiplied annually; for the ſeed will not produce the ſame varieties of flowers again.

So that when deſigned to have a ſupply of new varieties of any particular ſorts, ſuch as Tulips, Hyacinths, Crocus, Polyanthus-Narciſſus, &c. it muſt be effected by ſowing ſome ſeed every year, which is the conſtant practice of many eminent floriſts, but eſpecially the Dutch, who have greater patience than the floriſts of moſt other countries in this very tedious work, for in ſome bulbs, it is often from three, four, or five, to ſix or ſeven years from the time of ſowing, before they flower, and in the Tulips particularly, it is not only ſometimes ſix or ſeven years before they blow, but is often two or three years more before they break into variegations of ſtripes and bright colours; ſo that the work of raiſing bulbous flowers from ſeed becomes a very tedious proceſs; but there is no other way of gaining new varieties; nor are all bulbs ſo long before they blow, ſome will flower in three or four years; but the Tulip and Hyacinth, on account of the vaſt diverſity and beauty of the varieties, are the principal bulbs in which a ſupply of ſeedlings are often raiſed to gain new ſorts; ſo that when deſigned to raiſe a freſh ſtock of varieties, it can be effected only

only by ſeed, and theſe once obtained, may be increaſed numerouſly always of the ſame ſorts by root off-ſets, &c. as above obſerved.

We ſhall therefore proceed to exhibit ſome general directions of the method of raiſing them from ſeed, and then their propagation by off-ſets of the root, and by cauline or ſtem off-ſets.

By ſeed, as we juſt above obſerved, all the immenſe variety of our fine Tulips, Hyacinths, and other bulbous flowers were originally obtained, and the curious profeſſed floriſts always practiſe it more or leſs annually, eſpecially of ſuch kinds which are noted for affording variety, particularly Tulips and Hyacinths as the principal, but occaſionally Polyanthus-Narciſſus, Fritillarias, Crown-Imperials, Colchicums, Jonquils, Crocus, &c. all of which furniſh different varieties from ſeed, but the Tulip and Hyacinth the moſt abundant.

When therefore it is intended to ſow bulbous flower ſeeds, muſt mark ſome plants which produce the handſomeſt flowers, and after flowering permit the flower-ſtems to remain to perfect the ſeed, which, when perfectly ripe, gather in a dry day, expoſe the heads thereof to dry and harden it, then beat or rub it out and clear it from rubbiſh for ſowing, either the ſame year, in Auguſt, September, or in Spring following; and may be ſowed in beds of any good light earth, or in boxes; breaking the earth fine, and may ſow the ſeed either on the ſurface, and cover it with ſome ſifted earth from a quarter to half an inch deep, according to the ſize of the ſeed, the ſmalleſt ſize to be ſowed the ſhalloweſt, and ſo in proportion; or may ſow it in ſhallow drills, covering it in with earth the depth above adviſed, ſhallower or deeper as the ſeed is ſmaller or larger.

They will come up in April or May, but great care muſt be had to give moderate light waterings if dry

dry weather, and let the earth be kept exceedingly clean from weeds; for the plants will rise very slender at first, and weeds soon injure them, so should weed them with the utmost care, to encourage their growth as much as possible, as both the tops and root will be very small the first Summer.

As to their future general culture, observe in the first place, that as in June or July the tops will mostly decay, as is common to bulbous plants, then, having the surface of the beds well cleared from weeds, &c. it will be eligible to sift a quarter or half an inch depth of fine earth over the beds, &c. and thus to remain till next year, when the plants will come up stronger, managing them as above; and in the second or third Summer, if they have made any tolerable progress in bulbing in the root, may, when the leaves decay, take up the young bulbs and plant them out in nursery-beds of light earth, in rows three or four inches asunder, drawing shallow drills for this purpose an inch deep, so place the roots therein an inch or two asunder; and, after having a year's growth there, may in Summer, at the decay of the leaf, transplant them into other beds, in rows six inches distance, by two or three inches in the row, and the same in depth.

After this the bulbs will increase fast in growth, and arrive to a flowering state, observing, when they flower, to mark those which discover eligible properties, to take up for planting by themselves at the proper season, though the Tulips, as their merit consists in a diversity of elegant colours in stripes and variegations, will probably not break into variegated colours for a year or two after they first blow, for the first flowers are commonly wholly self-coloured, or all of one colour; but to encourage their breaking into variegations, should, after they have

have produced their firſt flowers, be planted into beds of light, dry, poor ſoil, for one or two years or more, which will greatly aſſiſt their breaking; ſo that according as they change into beautiful ſtripes, &c. let them be marked in order for taking up at the proper lifting ſeaſon, when the flowers and leaves decay; likewiſe the ſeveral other ſorts of ſeedling bulbs, having been marked when in flower, agreeable to the requiſite properties of their reſpective bloom, ſhould alſo be lifted at the decay of the flowers, &c. and let the bulbs of each different ſort be kept ſeparate, properly dried and cleaned, then laid up in the dry till Autumn, about October, November, &c. and then planted, the choice varieties of each ſpecies ſeparate, in beds, borders, &c. where they are to flower, and every year, in Summer, &c. ſoon after their bloom is paſt and the flower-ſtems decayed, take up the roots of all the fine varieties particularly, both in order to ſeparate the increaſed off-ſets for propagating and multiplying the different ſorts, and to give opportunity of new preparing the ground, for planting them again in Autumn, for bulbous plants are of many years duration, perpetuating their ſpecies annually by the root off-ſets, &c. as aforeſaid. —See the *propagation by off-ſets*, and the *general culture* of the *flowering bulbs*.

By Root Off-sets.

By off-ſet young bulbs emitted from the ſides of the old ones, all ſorts of bulbous-rooted flowers propagate freely, and in moſt kinds in tolerable abundance every year, fit to take off in Summer, Autumn, &c. when the flowers and ſtalks of the reſpective ſorts decay, the old roots having then performed their Summer's growth for that year, loſe

loſe their fibres and ceaſe to grow for a certain time, and may then, without the leaſt check or injury be taken up, and all the off-ſpring young bulbs emitted from the ſides of the main root, detached; alſo, when taken up at that period, the roots may be retained out of the ground two or three months or more, both for Autumn, Winter, and Spring planting.

But if ſuffered to continue in the ground any conſiderable time after they have done flowering, the roots would put forth new fibres, and aſſume a freſh growth, when it would be too late to remove them ſucceſsfully that ſeaſon, as they having then begun to form the bud for next year's flowering, would conſequently in many ſorts, receive ſo great a check by removal, ſo as either to prevent their flowering the enſuing year, or occaſion them to flower very weakly; ſo muſt obſerve the proper period, when deſigned to take up any ſort of bulbous roots, to perform it principally ſoon after the flower fades, both in order to ſeparate the off-ſets for propagation, and for tranſplanting the bulbs into new-prepared beds, &c. either ſoon after, or for keeping them out of the ground for Autumn or Spring planting, as aforeſaid; for when lifted at the above period of reſt, they will endure to be retained out of the earth ſeveral months, and will ſhoot with greater vigour when planted again, provided they are not kept out of the ground till the Spring is much advanced, though Autumn is the principal ſeaſon to plant for the general bloom, and allot a ſmaller quantity for the Spring planting, about January or February, for ſucceſſional flowers.

When, however, there is an abſolute neceſſity for removing bulbous roots, after they have aſſumed a freſh growth, they ſhould be planted again directly, or as ſoon after as poſſible, otherwiſe they will receive a conſiderable check.

However,

However, in respect to the work of taking up the old bulbs, to separate the off-sets for propagation, be careful to perform this always soon after the flowers fades, and the stalks and leaves decay, for the reasons above explained; generally chuse dry weather, and, having a scooped garden trowel, or handy spade for large roots of the Lily tribe, &c. dig them clean up without cutting or bruising, and let all the small off-set bulbs, attached to the main or mother-roots, be slipped off, keeping the mother-bulbs by themselves, likewise the larger off-sets, capable of flowering the future year, should also be kept in a separate parcel, to plant as flowering bulbs, and the smaller ones separated in order to be planted in nursery-beds for a year or two till they acquire proper size and strength to flower in tolerable perfection, then planted in the borders, beds, &c. among the full-flowering roots; for, as the off-sets will be of different growths, some will flower the year following, others not till the second or third season, in any degree of strength and beauty.

The large mother-bulbs, taken up for the separation of the off-sets, may, if most convenient, be dried, cleaned, and kept in the house till September, October, &c. for general planting, except the Autumn-flowering bulbs, such as Colchicums, Autumnal Crocus, Narcissus, &c. which should be always planted again in July and August, to flower the same year in Autumn.

The off-sets, when separated from the mother-bulbs, may either be planted directly, especially the smaller ones, or kept a month or two, or more, out of ground, if the place is not ready for them, dig beds of light earth for their reception three or four feet wide, and in which plant the larger off-sets, in rows six or eight inches asunder, either by dibbling them in that distance, by five or six inches in the row, and two deep, or draw drills with a hoe the above

above diſtance and depth, placing the roots along the bottom in a row, and draw the earth over them; but ſome of the largeſt off-ſets may be planted in beds and borders, among the full-flowering bulbs; however, as to the ſmaller off-ſets, they ſhould be planted in nurſery-beds, in rows five or ſix inches aſunder, generally in drills, the depth as above, placing the roots three or four inches aſunder in the rows, and earth them over evenly.

Let them have a year's growth in theſe beds, till next Summer, when the flowers and leaves then decay, and by which time the bulbs will have increaſed in ſize, they may be taken up, and the largeſt ſeparated, to add to the collection of the full-flowering bulbs, and the others reſerved for planting again in new-prepared nurſery-beds, to have another year's growth, when they will almoſt in general have acquired proper ſize and ſtrength for flowering in full perfection, and may then be planted where required.

By Cauline, or Stalk Bulbs.

Some of the bulbous-rooted tribe, producing young bulbs on the flower-ſtalks, both at the ſides and top, which ſerve alſo to propagate the ſpecies, as in many ſpecies of Moly, of the genus *Allium*, and in the bulbiferous Lily, &c. in which the bulbs are produced in Summer on the ſtalk, and ripen the ſame ſeaſon, proper for planting in Autumn.

In the bulbiferous kinds, the young bulbs are in ſomé produced principally at top of the flower-ſtem, in a head, as in the Moly tribe, &c. others emit them from the ſides of the ſtem, at the joints; and, in each method, are commonly ripe and proper for taking off in July or Auguſt; they, however, ſhould be ſuffered to grow till ſomewhat hardened, then ſlipped ſeparately, afterwards laid to dry and harden in the ſun,

ſun, then planted in nurſery-beds, either by dibble or in drills, five or ſix inches aſunder, and an inch or two deep, earthing the bulbs over that depth; and here they may remain a year or two, till of a full-blowing ſtate, then removed, when the ſtalks and leaves decay in Summer, and planted again in Autumn where they are deſigned to flower; managing them as adviſed before for the root off-ſets.

General Order of Planting Flowering Bulbs, and general Culture.

IN the different bulbous-rooted flowers, a ſucceſſion of bloom may be obtained from January or February, till October or November, commencing firſt in the early blow of the Snow-drop, Crocus, Daffodil, &c. and continued in ſucceſſional order by other ſorts in their due ſeaſon, all Spring and Summer, till ſucceeded by the autumnal kinds, as Colchicums, Autumnal-Narciſſus, flowering in Auguſt, September, and October; ſo that a collection of flowering bulbs have great merit for ornamenting the pleaſure ground, in the open flower borders and beds, &c. and occaſionally to plant in pots and water-glaſſes, for adorning the apartments of an houſe, or for placing in hot-houſes, hot-beds, &c. for forcing to an early bloom in Winter and Spring.

All the ſorts in the liſt of bulbous-rooted flowers, are hardy enough to proſper in any common ſoil in flower-beds and borders, in the pleaſure ground and flower garden, &c. proper both to introduce in aſſemblage with the fibrous-rooted flowers, and in beds by themſelves, in ſeparate collections of different ſorts, but eſpecially ſome of the capital kinds

of Tulips, Hyacinths, Polyanthus-Narciſſus, Jonquils, and any other principal ſorts that may be required.

But a collection of the fineſt Tulips and Hyacinths, in particular, ſhould always be planted in beds by themſelves, both in order to have an opportunity of affording them ſome occaſional protection from the weather, and of having the pleaſure of viewing them together to greater advantage under one point of view; and for which reaſon may alſo plant any other deſirable ſorts, as Jonquils, Polyanthus-Narciſſus, Colchicums, Fritillarias, Star of Bethlehem, Crown-Imperials, Bulbous Iris, Crocus, Belladonna Lily, or any of the Common Lily tribe, and ſuch other bulbous kinds that may be approved and required to have them in collection in ſeparate beds.—See the method of planting as hereafter.

However, a collection of the bulbous kinds ſhould always be diſtributed alſo in the common flower-borders, in aſſemblage with the fibrous and tuberous-rooted flowers, as before obſerved, to effect a variety in the diverſity of their different flowers, being planted ſome in a line towards the edge, as Winter Aconite, Snow-drop, Crocus, &c. and others in ſmall patches, clumps, or bunches, at moderate diſtances, of three or four roots in each, or ſome of the large kinds planted ſingly; all of which as hereafter explained.

The principal ſeaſon for planting all the ſorts of Spring and Summer-flowering bulbous roots, is in Autumn, about October and November, and beginning of December, or before Chriſtmas for the general blow the following year, and a few may be reſerved for Spring-planting, in the end of January, or in February for a ſucceſſional bloom, to come in after the blow of the autumnal plantation, thereby continue the bloom of the reſpective ſorts two or three weeks longer; thoſe planted in Autumn or before

before Chriſtmas, will flower earlieſt and ſtrongeſt, and the Spring-planted roots, if planted in due time, not later than February, will blow the ſame year, a fortnight or three weeks ſooner than thoſe of the Autumn-planting; however, ſhould not omit planting the ſupply of principal bulbs in Autumn, at the above time, to produce the general blow; but where it was omitted to plant in Autumn, take the firſt opportunity to plant them early in the Spring, in open dry weather.

But the autumnal-flowering bulbs, ſuch as Colchicums, Autumn Narciſſus, Crocus, &c. ſhould always be planted at the end of July, or early in Auguſt, time enough for them to blow ſtrong the ſame year in Autumn, in their proper ſeaſon.

A moderately light dry ſoil is the moſt ſuitable for moſt of the bulbous tribe, eſpecially for the Autumn-planting, though the general part will ſucceed in any common ſoil of a garden, and almoſt in any expoſure; however, for the capital ſorts, it is requiſite to prepare beds of the beſt moderately light ſoil.

Planting in beds.—In planting the capital ſorts of bulbs ſeparate in beds in the principal flower ground, ſuch as Tulips, Hyacinths, &c. let the beds be arranged parallel, and about three and a half or four feet wide, with eighteen-inch or two-feet-wide alleys between bed and bed, the ground well digged one or two ſpades deep, and finely broken, generally raiſing the beds three or four inches above the level of the alleys, and ſomewhat higheſt in the middle, in an eaſy rounding manner, and well raked.

Then the bulbs are to be planted in lines lengthways the bed, from ſix to nine inches diſtance, by five or ſix inches apart in each row, and from two or three to four inches deep over the crown of the bulbs, according to their ſize, the largeſt to be

planted deepeſt: the method of planting, being either by dibbling the ſmaller and middling bulbs in with a blunt-ended dibble, two or three inches deep, carefully ſtriking the earth very cloſely about the roots ſo as to leave no hollow; or, for the larger bulbs, may open holes with a hollow trowel, a proportionable depth and diſtance, planting one bulb in each hole, thruſting it a little down, and earth them over the proper depth; or draw drills for general planting, the diſtance and depth as above, ſo place the roots in the bottom of the drill, preſſing them a little into the earth, and draw the top earth over them: or may occaſionally plant the choice kinds of Hyacinths, Tulips, &c. by the following methods; firſt, raking the earth off the ſurface of the bed, from two to three or four inches deep into the alleys, or trim it off that depth with a ſpade, then place the bulbs bottom downward, upon the ſurface of the bed, in lines the aforementioned diſtance, thruſting each a little into the earth, as obſerved in the drill-planting; then, with the ſpade, caſt the earth out of the alley evenly over the bulbs, covering them therewith an equal depth, and as ſoon as planted, ſmooth-rake the ſurface of the beds.

Being thus planted in beds, the principal care is to keep them always very clear from weeds; and the beds containing the prime ſorts of Hyacinths, Tulips, &c. may be defended occaſionally in Winter and early Spring, from ſevere froſts and other inclement weather, either by arching the beds over with hoops, and covered with large thick mats, or canvas, in rigorous weather, as above; or may, before the plants come up, defend the roots with a covering of dry long litter, in default of mats; but always with mats, &c. ſupported on arches, after the plants appear above-ground, if any protection is uſed, for covering is not abſolutely neceſſary, as the

the plants both in root and top are hardy enough but only if discretionally covered on nights, &c. when very bad weather, and cutting winds prevail, after the flower-bud begins to advance, it, by affording some protection, will assist their flowering in greater perfection.

Likewise, when the plants of the fine Tulips, Hyacinths, &c. in beds, are of full bloom, if an arched awning of poles, hoops, or rods, are then constructed across the beds, a yard or more high, to support mats, or canvas, on nights and when it rains hard, and also to shade them from the full sun, from nine or ten till three or four o'clock, it will preserve the the beauty of the flowers, and continue them longer in full perfection; for as some of these kinds are purchased at a very high rate, no pains should be spared to obtain them flowering in as great perfection, and continue as long in flower as possible; so that an awning of the above kind may be constructed high enough to stand under, and in which the mats or canvas may always remain on at top, and the sides let down on nights, and occasionally on days, more or less, to defend the flowers from the sun, rains, &c. but when the flowers are past perfection, remove the covering entirely to admit the air and rains freely to improve the growth of the roots and their off-sets, till the flower-stems begin to decay, and have done their Summer's growth.

Then, when the stalks and leaves decay, the roots should be taken up, the off-sets separated, and the smaller ones may be planted again soon after, but the larger off-sets, and the main bulbs, must be dried, cleaned, and kept in the house for planting in Autumn, &c. at the proper season, before directed.——See the general directions for taking up bulbous roots.

Planting bulbs in the borders, &c. in aſſemblage with fibrous and tuberous-rooted flowers is very eligible to effect an agreeable contraſted variety, and in which may plant a collection of almoſt all the ſorts of hardy bulbs; generally chuſing the Autumn ſeaſon for planting the principal ſupply; but if omitted at that time, plant them as early in the Spring after Chriſtmas as the weather will permit.

In this order of planting of bulbs in aſſemblage in the common borders, &c. obſerving to have the borders or other compartments properly digged, either at the time for planting, or ſome little time before; and in proceeding to plant, let the ſmall roots, ſuch as Crocus, Snow-drops, &c. be planted near the edge, either in a continued row, or in bunches, one, two, or three feet aſunder, and plant ſome common Tulips, Hyacinths, Narciſſuſes, Jonquils, &c. a foot or half a yard backward, in ſeparate ſmall bunches, of three, four, or five bulbs in each, and the bunches at one or two yards or more diſtance, ſome forward, others more backward in the border, and in that order may diſpoſe various ſorts about the borders; but the larger kinds of bulbs, ſuch as the White Lily, Orange Lily, Martagons, Crown-Imperials, and ſuch like large-rooted and tall-growing kinds, may plant them ſingly; or, if required to have them at once make a conſpicuous appearance, may plant two or three together in a bunch, placing theſe kinds towards the middle or backward part of the borders, &c. remarking, however, that all the ſmall-blowing kinds, ſuch as the Crocus, ſhould generally be planted in little cluſters, though they are alſo often planted in a cloſe row, along the edges of beds and borders

As to the method of planting in theſe compartments, in aſſemblage with other plants, it may either

either be performed with a thick blunt-ended dibble, or by opening apertures with a trowel, &c. from two or three to four inches deep, as obſerved in planting in beds, placing a bulb in each hole, being very careful in each method of planting to cover in the roots cloſely with the earth, leaving no hollow vacancy about the bulb.

The bulbs planted in this order, require no particular care but to keep them clean from weeds in common with the other flowers of the borders; and when their flowers are paſt, in Summer, &c. and the ſtalks and leaves begin to decay, any of the more capital ſorts may then be taken up every year or two, to ſeparate the off-ſets, and replanted again in Autumn; but the bulbs in general in the borders, when grown into large bunches, ſo as the increaſed off-ſets crowd and cramp one another, will conſequently all require taking up to divide and ſeparate the off-ſets, being careful to perform it ſoon after the decay of the flowers, leaves, and ſtalks, and reſerve the largeſt roots for planting again in the borders, &c. which may be done either almoſt directly, or ſoon after, if convenient to dig the borders, or in the Autumn, at which time the general blow of moſt of the other plants will be over, and the borders can then be more conveniently digged for the reception of the bulbs, for the ground ſhould be freſh digged at each time of planting.

In thoſe years when the bulbs in the common borders, as above, remain unremoved after the flowering, clear away the decayed ſtalks and leaves in Summer, &c. according as the blow of the different flowers is paſt; and in the Spring, when the bulbs ſhoot up through the ſurface of the earth, ſo as to diſcover ſufficiently where they are, the borders ſhould be digged, keeping a good eye to the buds of the bulbs then appearing above-ground,

as

as a direction in digging without injuring them with the ſpade.

Of Removing Bulbous Roots.

As bulbous-rooted plants in general perpetuate their ſpecies by root off-ſets, more or leſs annually, they require to be taken up, ſome every year, others once in two or three years or more, to ſeparate the off-ſets; in all the capital kinds of Tulips, Hyacinths, and other curious bulbs, they ſhould be taken up annually in Summer, ſoon after they have done flowering, and the ſtalks and leaves begin to wither and decay, in order to clear the large-blowing roots from all off-ſets, both to propagate the reſpective varieties therewith, and that the main roots by having no incumbrance of off-ſpring, may blow in their fulleſt perfection; but the common ſorts of bulbous plants, may either be removed every year or two after flowering, when their ſtalks and leaves are withering; or thoſe diſpoſed in clumps about the borders, that, if required to blow in large cluſters, to appear as conſpicuous and ſhowy as poſſible, they may remain unremoved two, three, or four years; obſerving, however, that when increaſed into ſuch conſiderable cluſters, as the off-ſets crowd and ſtarve one another, and they flower weak in proportion, they ſhould be taken up and divided as often as they ſhall ſeem to require, according to their increaſe of off-ſets.

The proper period for taking up, tranſplanting, or removing bulbous roots, is, in moſt ſorts, principally in Summer, from May and June to July and Auguſt, according as the flowers of the different ſorts fade, and their flower-ſtalks and leaves wither and decay, as alſo the fibres of the root, and then the roots having finiſhed the year's growth, and

for

for ſome time remain entirely at reſt, drawing no nouriſhment, may ſafely be removed, either for planting again directly, or kept in the houſe till Autumn, before planted; though as ſome of the autumnal-flowering bulbs produce their flowers without being attended by leaves, thoſe not being produced till after the flower fades, when the leaves either coming up ſoon after, or ſome not till Spring, the roots continue their growth till April, May, &c. then ceaſe growing, and the leaves will decay, and which is the proper period for removing thoſe kind of bulbs.

For it is of importance to obſerve ſtrictly the proper period for removing bulbous roots, juſt when they have effected their year's growth, and aſſume a ſtate of reſt, they exhibiting notice thereof by their leaves decaying, at which time, or ſoon after, all thoſe intended for removal, ſhould be taken up, for, after a ſhort ſpace, if they remain in the ground, they will put forth new fibres, and commence a freſh growth, when it will be too late to remove them without weakening the bulbs, and, in many ſorts, would probably prevent their flowering the next year, or at leaſt but very inconſiderably; nor will the bulbs keep any conſiderable time out of the ground without injury, ſo that if any are obliged to be removed while in their growth, ſhould plant them again as ſoon as poſſible.

Remarking, therefore, the proper period as above, for taking up the general ſupply of bulbous roots, when intended either for ſeparating the off-ſets, and freſh planting ſoon after, or for keeping for Autumn or Spring-planting, to perform the work of lifting them ſoon after the flower is paſt, juſt as their ſtalks and leaves are decayed, but before they are withered away, as while they remain, it will be a direction to the place of the bulbs; generally

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chufing dry days, and having a proper garden trowel, with this dig up the bulbs clean to the bottom, with their refpective off-fets adhering about each mother-bulb; fpread them to dry and harden a day or two in the fun, or in any dry airy apartment, afterward feparate all the off-fets from the main roots, which clear from earth and loofe fkins, and the leaves and ftalks, and then either put the whole up in boxes, &c. for Autumn-planting, or may plant any particular forts again foon after, efpecially the fquamous bulbous kinds, though if taken up at the period of reft, they will keep out of ground till October; but the fmall off-fets of any of the forts of bulbs may be planted in nurfery-beds foon after they are feparated from the parent, or towards Autumn.

While the bulbs of any forts remain in the houfe, be careful to keep them in a dry place, otherwife fome of the more delicate forts will be attacked with the damp or mouldinefs, and prove very hurtful, efpecially the Hyacinth tribe, nor fhould this tribe of bulbs in particular be crowded too clofe, or thickly laid one upon another, but kept thinly in dry boxes, or fhelves, &c. fo that the more curious bulbous roots fhould be occafionally looked over while they remain houfed, and let all fuch as difcover any tendency to difeafe or infection, be removed from among the found ones before the malady fpreads.

When defigned to fend any of the finer varieties of bulbs to any diftance, fuch as Hyacinths in particular, and other large bulbs of the capital kinds, fhould be wrapped up feparately in clean dry paper, and carefully packed up in boxes.

When there is a particular occafion to remove any forts of bulbous roots out of the ground while they are in a growing ftate, either before or after they have flowered, they generally fhould be plant-

ed

ed again as ſoon as poſſible, as we formerly obſerved, otherwiſe there will be no chance of their flowering at the enſuing proper ſeaſon, and will be conſiderably weakened; and, indeed, many ſorts of bulbs will ſcarcely flower at all at the uſual ſeaſon for that year or the year following, if removed when in full growth.

Blowing Bulbous Roots early.

To have bulbous flowers blow in Winter and early part of Spring, a month or two, or more, before their natural ſeaſon in the open ground, it is effected both by ſetting the bulbs ſingly upon glaſſes of water, placed either in the windows of an houſe, or in any common hot-houſe or ſtove, to force them earlier into flower, or by planting the roots in pots of light earth, and placed near the glaſſes, and in all of which many ſorts of bulbs will flower very beautifully with but very little trouble, even in the middle of Winter, or early in the Spring, long before the natural ground bloom.

By water-glaſſes, as I before obſerved, may alſo blow Hyacinths, Polyanthus-Narciſſus, Large Jonquils, Early Dwarf Tulips, &c. in very good perfection, and the ſeaſon for placing the roots on the glaſſes, may be at different times, from October or November, to January or February, beginning the earlieſt with the Hyacinths and Polyanthus-Narciſſus, or other Narciſſus kinds, Jonquils, &c. and towards Chriſtmas, or ſoon after, plant Tulips, or the like, the glaſſes being filled with water, the bulbs ſoon ſend out fibres perpendicularly therein to the bottom of the glaſſes.

Glaſſes are made for this purpoſe, to contain from about half a pint to a pint of water, narrow and upright,

right, about ſix or eight inches high, with a wide concave mouth at top, to contain one bulb in each glaſs, which may be had of different ſizes to ſuit the different ſized bulbs, at the glaſs ſhops, and the dealers in bulbous flowers.

Let the glaſſes be filled with ſoft water, ſo as the bottom of the bulb may juſt touch it, then place the bulbs one in each glaſs, and ſet the glaſſes according to your convenience, either in a ſunny window of any apartment of a dwelling-houſe, or in a green-houſe or hot-houſe, the bulbs will ſhoot out ſtrong fibres perpendicularly into the water, and puſh forth ſtrongly at top for flowering; being careful to keep the glaſſes filled up near to the bottom of the bulb with freſh ſupplies of water, and at times pour out ſome of the old, and add a quantity of freſh, always ſoft water if poſſible; and the roots will thus flower very agreeably at a deſirable ſeaſon, when there are ſcarcely any flowers in blow in the open air; and to thoſe not furniſhed with a garden, may, by planting in the water-glaſſes at different times, have a ſucceſſion of flowers continued from Winter throughout the Spring, and all the natural ſeaſon of flowering of the reſpective ſpecies of bulbs, and thereby have a continuation of bloom for ſeveral months.

Some, for blowing bulbs in water, have a ſort of ſmall ciſterns covered at top with a piece of board or lead, with holes at proper diſtances, upon which to place the bulbs, ſo filling the ciſtern with water; but in our opinion this large body of water is apt to rot the bulbs.

By planting bulbs in pots or in boxes of dry earth, may alſo obtain an early bloom in Winter and Spring, by placing the pots either in a hot-houſe or hot-bed, or in default of ſuch convenience, place the pots in a ſunny window of a dwelling-houſe, but by aid of a hot-houſe or hot-bed the blow will be obtained much earlier,

For

For this purpoſe may plant the bulbs in Autumn, Winter, and early in Spring, either ſingly in ſmall pots of light dry earth, or two or more roots together in larger pots, or in boxes; obſerving, in either method, to plant the bulbs a little within the ſurface of the mould; and then place the pots, &c. in any ſheltered dry ſituation till the time you intend to force them, ſuch as in any common garden-frames, defended in bad weather with the glaſſes.

To force bulbs into flower in a hot-houſe, is very eaſy, that having them planted in pots or boxes, as above, may begin to force them by placing the pots in a hot-houſe or any common pine apple ſtove, or other forcing department at work, in December, January, March, &c. according as it is required they ſhall blow earlier or later, or in ſucceſſion in an early Spring bloom; placing the pots upon any of the ſhelves, &c. or to have them flower earlier, plunge them in the bark-bed; giving the pots in general occaſional light waterings, juſt to keep the earth moderately moiſt, which is all the culture they require, and they will blow very early.

But when deſigned to blow them early in hot-beds, under frames and glaſſes, January or February is time enough to begin; and may be effected either by common horſe ſtable dung hot-beds, or of tanner's bark, which, where it can be eaſily obtained, is preferable, being made in a pit of proper dimenſions to fit the frame and lights intended; however, in default of this, dung hot-beds will do, having earth or waſte tan at top in which to plunge the pots containing the bulbs: or bulbs may be forced in boarded flower forcing-frames, being upright erections fronting the ſouth ſun, formed of ſtrong planking cloſely joined, five or ſix feet high or more, by four or five feet width, the length at pleaſure, and fronted on the ſouth ſide with move-

able glaſs ſaſhes, &c. inclined or ſloping towards the back; and in which the pots of bulbs being placed upon ſhelves in the latter end of January or in February; and then applying hot dung to the back of the frames withoutſide, laid near three feet wide at bottom and raiſed a little ſloping to the top; and it will throw a ſtrong heat internally, and ſet the plants a growing freely; obſerving, in either of theſe methods, to give the plants air every mild day, and give occaſional waterings. —See *forcing perennial flowers*.

DIVISION

DIVISION

OF THE

ANNUAL FLOWERS

INTO

DIFFERENT CLASSES,

According to their NATURE and TEMPERATURE;

AND

METHOD of CULTURE accordingly.

ANNUAL Flowers are ſuch as are only of one year's duration, or moſtly endure but one Summer, or ſome only three or four months; being raiſed from ſeed in the Spring and Summer, ſhoot up to flower the ſame year, ripen ſeed, and then wholly decay top and root the following Autumn or beginning of Winter, never ſurviving to flower a ſecond year; and as they are of different temperatures, *Hardy*, *Tender*, and *Leſs Tender*, they are accordingly divided into claſſes agreeable to their nature, and the culture of each claſs conformable.

FIRST CLASS.

HARDY ANNUAL FLOWERS,

Such as require no aid of artificial heat, but sowed at once in the open ground, in March and April, mostly in the places they are to remain, some occasionally for transplantation:

Adonis Flower
Alkekengi
Allysson (Annual)
Amaranthus, Princes-Feather
Amethystea (Annual)
Belvedere
Balm, Moldavian
Candy Tuft
Catchfly (Lobels)
Caterpillar Plant
Lupines
Mallow (Oriental)
Mignonette
Nasturtium
Nigella, or 'Devil in a Bush
Pansey, or Hearts-ease
Peas, Sweet-scented, Tangier, Painted Lady, &c.
Persicaria
Poppies
Sun-flower
Stocks (Annual) Ten-week
Saff-flower (Annual)
Snail Trefoil
Snap-dragon (Annual)
Clary, Red-topped, White-topped, &c.
Convolvulus (Minor and Major)
Corn-bottle, or Cyanus
Cucumber (Spurting)
Fumatory (Yellow)
Hedgehog Trefoil
Honey-wort
Indian Corn
Ketmia
Lark's-spur
Lavatera
Scarlet Bean
Sweet Sultan
Tobacco
Venus Navel-wort
Venus Looking-glass
Wallflower (Annual Prussian)
Xeranthemum, or Eternal-flower.

THESE are all hardy annuals, rising in Spring, and totally die next Autumn, and most of

of them producing either very ornamental flowers, or of ſome curious ſingularity of growth, deſerve cultivation as Summer and Autumn flowers, for the decoration of the common flower borders.

Moſt of them may be ſowed at once where they are to remain to flower, in ſmall patches about the borders.

They ſhould be ſowed principally in March and April, any where in borders of the pleaſure ground and flower garden, digging for their reception, ſmall patches with a garden trowel or ſmall ſpade, each patch about eight, ten, or twelve inches diameter, and one, two, or three yards diſtance, breaking the earth fine, and in each ſow a different ſort of flower, thicker or thinner, according to the ſorts; the ſmaller kinds ſow pretty thick, and the larger thinner in proportion, from a quarter to half an inch deep; giving water in dry weather, and when the plants come up, thin them where too crowded; and in the Sun-flowers in particular, leave only one good plant in each patch; in others leave ſeveral, and ſome leave in ſmall tufts; obſerving, the thinning is beſt performed in ſhowery weather, and in ſome ſorts which riſe with good roots, may be planted in any vacant ſpaces where required; being careful in thinning the patches not to looſen the remaining plants, and a little water given them will ſettle the earth cloſe about them again.

In their general culture, give them water in dry weather, till well advanced in growth, keep them clean from weeds, and looſen the ſurface of the mould about them, and draw a little earth up to their ſhanks in their early growth, which is all they require, except placing ſtakes to ſuch as require ſupport.—See the general culture.

SECOND CLASS.

TENDER ANNUAL FLOWERS,

Such as require to be raised in hot-beds till arrived to perfection, then placed in the full air in June and July:

Amaranthus tricolor	Sensitive Plant
Amaranthus bicolor	Ice Plant
Cock's-comb	Stramonium
Globe Amaranthus	Double-striped Balsamina
Melongena, or Egg Plant	Browallia.
Humble Plant	

ALL these being very tender annual plants of only one Summer's duration, must be sowed in the middle or latter end of February, or beginning of March, in a common horse dung hot-bed, &c. under frames and glasses, either in the earth of the bed, or separately in pots, and plunged therein, covering the smallest seeds, such as the Amaranthus tricolor and bicolor, and Cock's-comb, as lightly as possible with fine mould, and the larger seeds about a quarter or half an inch, put on the glasses, and when the earth is dry, give light sprinklings of water; and when the plants appear, admit fresh air by tilting the glasses an inch, or a little more or less behind, in the warm time of the day, and give necessary refreshments of water at times; shut the glasses close on nights, and cover them during the cold nights with garden mats.

When the plants are an inch or two high, prick them down either in the same or a new hot-bed, in rows four inches asunder, giving water at planting, and

and ſhade from the ſun till they have taken root, giving free air every moderate day, and moderate waterings as you ſhall ſee neceſſary; keeping up the heat of the bed by linings of hot dung againſt the ſides when the warmth declines.

In a month after being pricked down, as above, they will be advanced in growth and require more room, when a freſh hot-bed muſt be made for a two or three-light deep frame, earthed ſix inches, and when become of a due temperature of heat, take up every other row of plants with balls of earth to their roots, and plant them into the new hot-bed ſix or ſeven inches diſtance, and ſome plant in pots, which plunge into the earth of the bed to their rims; giving the whole ſome water as ſoon as planted, and ſhade them from the ſun till rooted afreſh.

Let the whole in each hot-bed have the benefit of the free air every mild day, by raiſing the glaſſes more or leſs, proportionable to the ſun's heat and the temperature of the weather, and let them have plenty of water twice a week, or oftener if the earth is dry and the weather warm.

Likewiſe ſupport a proper warmth in the bed by linings of new dung as before adviſed, to forward the plants well in their early growth, that they may attain good perfection by June or beginning of July, ſo as to have them in beauty great part of the Summer.

Obſerve, according as the plants increaſe in growth, they ſhould be ſhifted into larger pots, reſerving the balls of earth about them; and all that are not yet potted, and are deſigned for pots, ſhould alſo be moved therein with balls, and placed in the hot-bed.

According as the tall-growing ſorts advance in height, allow them due ſcope to ſhoot, by augmenting the depth of the frame, either placing another upon it, or raiſing it at bottom upon props or poſts fixed

fixed at each corner, and defend the vacancy at bottom by nailing mats to the frame, especially on nights, still continuing the glasses on till June, but raise them behind or in front more or less, every day, for the admission of fresh air at top; though where the frame is raised at bottom as above directed, less air at top is required.

Be careful to allow plenty of water as the warm weather increases.

In June the plants will mostly flower, and as the weather will then be settled in warm, begin to harden them by degrees to the full air, by taking off the glasses in the middle of the day, then all day long, and at last all night; or the pots of plants may be moved into the open air occasionally in the middle or end of June, and in the end of that month, or in July, move the whole into the full air, finally to remain, having the finest plants principally in pots of a large size, so that those in small pots may now be removed into larger, with the whole ball of earth about the roots entire; and let the rest not intended for pots be transplanted into the full ground, in the borders of the pleasure ground and flower garden, in assemblage with other annuals; and those in pots, placed to adorn any principal compartments where required; observing to give water directly at planting, and afterwards as they shall require: those in pots will require water every day in hot dry weather, or every morning and evening.—See the general culture of annuals.

THIRD

THIRD CLASS.

LESS TENDER ANNUAL FLOWERS,

Such as require to be raised and forwarded a little at first in a hot-bed, and afterwards planted out into the open ground in May and June, or some of the prime sorts also in pots, as hereafter, viz.

African Marigolds
Aramanthus (The Tree)
Trailing Spiked Amaranthus, or Love Lies Bleeding
Capsicums
Cape Marigold, or Calendula
Chinese Aster
Chinese Hollyhock
Chrysanthemum
Convolvulus (Major)
French Marigold
Indian Pink
Marvel of Peru
Mignonette
Nolana
Palma Christi
Persicaria
Love-Apple
Stock-Gilliflowers (The annual sorts) or Ten-week Stocks
Sultan-Flower
Zinnia
Browallia
Basil.

ALL these are annual flowers, of only one Summer's duration, and of a hardier nature than those of the second class, as most of them may be sowed in the open ground in default of a hot-bed, but if indulged with a hot-bed they will come in much forwarder, sowing them therein any time in March and April, and in the full ground any time from about the latter end of March till the beginning or middle of May, in a warm border, or beds of light earth, either in shallow drills, and covered a quarter or half an inch deep, or on the surface, and raked in, or earth spread out of the alleys over them; giving occasional waterings, and when the plants.

plants are two or three inches high, take advantage of moiſt weather in May, &c. and prick ſome out in beds, in rows ſix inches aſunder, and the reſt plant at once in the borders where they are to remain, watering them when planted and till well rooted again; and when thoſe pricked in beds are arrived to a good ſize, tranſplant them with balls, ſome into the borders as the others, and a quantity of the principal kinds and double ſorts into pots, to move for the decoration of court-yards, or any conſpicuous compartments.

But this claſs of annuals, in default of frames and glaſſes, may be ſowed in a hot-bed under oiled paper, or hand or bell-glaſſes, or under occaſional protection of garden-mats; or without a hot-bed, may be raiſed in the natural earth, under ſhelter of any of the above.——See the general culture of annuals.

General Culture of each Claſs of Annuals.

Firſt, the Culture of the Hardy Annuals to be raiſed in the open Ground.

Hardy annuals being ſuch as grow freely in the open borders, beds, and other compartments of the pleaſure and flower garden, without any previous aid of artificial heat in raiſing them, but ſucceed by being ſowed at once in the open ground where they are to remain, and without requiring to be tranſplanted; ſo may be ſowed in patches about the borders, &c. among other flowering plants, in Spring and early part of Summer, in the places where they are to flower; and if a long ſucceſſion of any particular ſorts is required, may ſow ſome at two

two or three different times, from February or March, till the end of May.

So obſerving this claſs of annuals is adviſed to be principally ſowed where they are deſigned to flower, without any trouble of tranſplanting, except occaſionally to ſupply any particular vacancy.

The principal ſeaſon for ſowing for the general blow, is from the middle or latter end of February, if mild weather, till the middle of April, though March is a very ſucceſsful time for ſowing, to have an early and ſtrong bloom; but may ſow alſo with good ſucceſs any time in April; alſo in May and June, for ſuch as go ſoon out of flower, and that it is required to have a late ſucceſſional blow in the end of Summer.

As to the order and method of ſowing theſe kinds in the borders, &c. in aſſemblage with other flowers, obſerve as follows:

That having a proper garden trowel, &c. dig therewith ſmall patches ſix or eight inches broad, about in the different borders, &c. at proper diſtances, ſome near the front, others towards the middle and back part, allotting the ſeeds of the loweſt-growing plants for the front patches, the taller ones more or leſs backward, according to their known height of growing, as near as poſſible, and the talleſt ſtrong-growing annuals ſhould be ſowed moſtly in the back line, ſuch as the Giant Sunflower, Perſicaria, Oriental Mallow, and the like kinds, or any high-climbing ſorts; obſerving, in ſowing the ſeveral ſorts, to break the earth of the patches fine; and as you proceed in ſowing, draw ſome earth, with the hand, off the top to one ſide, from a quarter or half an inch to an inch deep, according to the ſize of the different ſorts of ſeed, the largeſt to be ſowed the deepeſt: ſo ſowing the different ſeeds, thicker or thinner in proportion to its ſize, and according to the growth of the reſpective plants; ſome requiring to grow in tufts or bunches,

bunches, as Candy Tuft, Venus Looking-glaſs, and Navel-wort, and many others of ſmall growth, whoſe flowers would make no appearance unleſs they grow in a cluſter; and others of larger growth, ſhould ſtand but two or three together in a patch; and in ſome, ſuch as the Sun-flower, Perſicaria, &c. ſhould ſtand ſingly, or only one plant in a place; however, in ſowing, do not ſpare ſeed in moderation, according to the ſorts, and ſowing it in the manner juſt above obſerved, cover it in evenly the proper depth, by the ſame rules; and thus proceed ſowing in different patches about the borders, beds, &c. all of which are to remain to flower where ſowed, without any farther trouble than thinning ſuch as ſtand too thick, as hereafter explained.

Likewiſe may ſow ſome in pots of any of the more deſirable ſorts, for placing occaſionally to adorn fore courts, or any particular compartment required.

In dry weather give the patches and pots frequent light waterings, both before and after the plants come up.

After the plants have been come up a week or a fortnight, or three weeks, or when advanced an inch or two in growth, thoſe that are too thick, or ſuch as require thinning, ſhould be thinned accordingly as they require, leaving ſome of the ſmall-growing plants in little tufts, as before obſerved; others of larger growth, thin more in proportion, and of the large kinds, leave only two or three in a patch; and in ſome of the largeſt, only one plant in a place ſhould be left, ſuch as in Sun-flower, Perſicaria, &c. as aforeſaid; and as ſoon as thinned, give water to the remaining plants to ſettle the looſened earth cloſe about their roots again; permitting the whole to remain to flower where they now ſtand.

Their culture after this, is principally to keep them clean from weeds; give moderate waterings in

in dry weather, till advanced a little in ſize and ſtrength; and let the tall-growing and climbing plants have ſupport of ſtakes or ſticks, &c. as they ſhall require, to continue them in an upright growth.

Thus permitting them moſtly to remain where ſowed, and they will flower abundantly in their due ſeaſons.

However, if there are any deficiencies in any part of the borders, and that there are plants to ſpare in other parts, may take opportunity of ſhowery weather, while they are young, to tranſplant ſome of ſuch as are of a ſtrongiſh growth, and have good fibrous roots, taking them up with as much earth as will eaſily ſtick about the fibres, plant them, and give water, and they will ſucceed.

Any ſort of deſirable hardy annuals of a ſhowy bloom, as Ten-week Stock, Candy Tuft, &c. that may be required to blow early, may ſow them in pots in January or February, &c. and place them in a hot-bed or hot-houſe, &c. as formerly obſerved; and they will flower very early in good perfection.

To ſave ſeed of the hardy annuals, moſt of the ſorts produce it abundantly in Summer and early part of Autumn, when let a due quantity be gathered in dry weather, for next year's ſowing.

As all the kinds of hardy annuals periſh wholly root and top after they have flowered and perfected their ſeeds, they ſhould accordingly be entirely pulled up, when the flower and ſeeding is paſt, for they never live to flower a ſecond year.

Culture of the Tender Annuals in Hot-beds.

Tender annuals, being ſuch as are natives originally of the warmeſt climates, are unable to endure the open air in this country, either in the ſeed or plants, till the middle or end of May, or beginning of June, ſo require to be raiſed and forwarded in a hot-bed till that time, and as in ſome ſorts, their principal merit conſiſts in being forwarded to a large ſize, they require the aid of removal to different hot-beds, and deep frames, to admit of drawing them up in due height, ſuch as the Giant Cock's-comb, Tricolors, Stramoniums, Melongenas, Balſamines, Globe Amaranthus, &c. for the large Combs and Tricolors, in particular, are ſometimes drawn five or ſix feet high; though thoſe of three or four feet will alſo make a good appearance; and ſome of the Dwarf Combs do not exceed from five or ſix to ten or twelve inches in height.

However, as moſt of the annuals of this claſs have great merit as very curious and ornamental plants, they deſerve particular attention, and ſome ſhould be annually raiſed for adorning fore courts and other conſpicuous compartments, planted chiefly in pots for the principal ſhow, and ſome to plant out alſo in the borders, &c. in aſſemblage with the other flowering tribe.

The ſeaſon for ſowing this claſs of annuals, is February, March, and April, according to the convenience of hot dung for different hot-beds, and of frames and glaſſes; if required to have them in perfection as early in Summer as poſſible, and have conveniences to carry them through, may ſow in February; though, in a moderate way, March and beginning of April is a good ſeaſon for ſowing.

Where there is the accommodation of a hot-houſe, may raiſe ſome ſorts in tolerable perfection with

with but little trouble, ſuch as Balſamines, Globe Amaranthus, or any other, ſowing the ſeeds in pots, and plunge them in the bark-bed towards the front glaſſes; and when the plants are an inch or two high, prick them out ſeparately in ſmall pots, give water, and plunge them alſo in the bark-bed, and when the plants are advanced coſiderably in growth, tranſplant them with the balls of earth about their roots, into large pots to remain, placing them a while in the bark-bed to forward them; and ſupply them with frequent waterings.

However, as theſe plants are moſtly raiſed in common hot-beds, under frames and glaſſes, for the general ſupply, either dung hot-beds, as in the principal part, or occaſionally in thoſe of tanner's bark; the following general directions are to be obſerved as the practical methods.

Let a ſeed hot-bed of freſh horſe dung be made two or three feet high, for a one-light frame, which will be of ſufficient ſize to ſow the ſeed and raiſe plants enough for tranſplanting into larger hot-beds, to forward them for the ſupply of any private garden; and ſo in proportion for public ſupply for ſale; or if any hot-beds of Cucumbers and Melons are at work, may, to ſave dung and trouble, ſow the ſeed therein; in either caſe, the ſeed may either be ſowed in the earth of the hot-bed, or ſeparately in pots, and plunged therein to their rims, being careful to break the earth very fine, and if you ſow in the earth of the bed, it may either be in ſmall drills drawn with the finger, or ſowed on the ſurface and covered in, but the latter method muſt generally be practiſed when ſowing in pots; obſerving, that as the ſeeds of ſome ſorts are very ſmall, as in the Combs, Tricolors, Ice-plant, &c. they ſhould be ſowed very ſhallow, not exceeding half a quarter or a quarter of an inch deep, the other larger ſeeds deeper in proportion; giving very light ſprinklings of water both before and

after the plants come up, and cover the glasses on nights with mats; being also careful to admit air into the frame to let the steam of the bed pass off, by tilting the glases half an inch or an inch, or more, every day.

But when the plants come up, be sure to admit air to them every mild day, by raising the upper end of the light, from half an inch to one or two inches high, according to the heat and steam of the the bed, aud the temperature of the outward air; for they must not be kept too close, otherwise they will draw up very weak.

Let the plants also have frequent very light waterings in warm sunny mornings out of a small watering-pot.

When the plants have advanced in growth an inch or two high, it is proper to prick them into another hot-bed, either in pots or in the bed; which should be made of good hot dung or of tanner's bark, three feet high for a two or three-light frame, which set on as soon as the bed is made, and when it is become of a proper temperature, of moderate heat, then lay in some light, dry, rich earth broken fine, and laid six or eight inches thick, all over the surface of the bed, put on the glasses till next day, when the earth will be warm for the reception of the plants from the seed-bed, which take up carefully with all the root as entire as possible, and as much mould as will hang about them separately, then, if intended to plant any now in small pots, fill them with the warm earth of the bed, and prick one plant in each pot, give a little water, and plunge them into the earth; and if designed to plant them immediately in the earth of the bed, prick them in with the finger, in rows from four to six inches asunder; give a moderate watering out of a small watering-pot, as before cautioned, that they may not be beat down or washed out of the earth by the weight of the water;

shut

ſhut down the glaſſes directly, and cover them on nights with mats, and ſhade them from the mid day ſun the firſt four or five days, till they have got good root.

They muſt have freſh air admitted daily, and occaſional ſupplies of water; admit air every mild day by tilting the upper ends of the lights from one to two or three inches high, according to the temperature of heat in the bed, and that of the weather, obſerving as the warm ſeaſon and power of the ſun increaſes, to give a larger admiſſion of freſh air in proportion; and give water as often as you obſerve the earth to become dry and require moiſture; never, however, water too heavily or much at a time, but repeat it often, lightly and moderate, juſt to preſerve the earth moderately moiſt.

Likewiſe be careful to ſupport the heat of the bed by applying linings of freſh hot dung to the ſides, but in bark-beds none will be required.

When the plants have increaſed in growth to meet and crowd one another, they muſt be thinned out and planted into another hot-bed, which ſhould be prepared as the former, and a deep frame placed thereon to admit of the plants having ſcope to advance in height; ſo taking up the plants, either wholly or every other row, and every other plant in the row out of the firſt tranſplanted bed, uſing a hollow trowel in this work, ſo as to raiſe each plant with a ſmall ball of earth about the roots, and then either plant them in pots, (245) one in each, or in the earth of the bed, ſix or eight inches aſunder, and potted in a month after; giving directly a moderate watering, and put on the glaſſes, covering them with mats on nights; and give a ſlight ſhade of mats to keep off the mid-day ſun for a few days till they have taken freſh root; obſerve alſo to admit freſh air daily in warm days, by the rules exhibited in the former beds, and give moderate waterings two or three times a week; and ſtill keep up

the heat of the bed by applying occaſional linings of hot dung to the ſides; eat and moiſture in conjunction will advance them rapidly in growth.

According as the plants riſe in height, and if they are in but a ſhallowiſh frame, and preſs againſt the glaſſes, either raiſe the frame ſix inches at bottom, or add the depth of another frame to the firſt, if furniſhed with what is called a multiplying-frame, conſiſting of two or more frames made to join one upon another, one being deeper than the reſt, and is that on which the glaſſes are to be placed, being made higheſt behind, the others all of an equal depth on every ſide, ſo that the frame deſigned for the glaſſes being placed firſt on the bed, and the plants having reached the glaſſes thereof, it is to be removed, and one of the others placed immediately next the bed, then place the frame having the glaſſes upon this other frame; and the plants having again aſpired to the glaſſes, uſe another additional frame if any, ſtill placing that with the glaſſes uppermoſt; but indefault of ſuch a frame, or one of proper depth to admit of the plants growing to the full height, let ſuch frame as you have be raiſed at bottom, either upon props underneath, or by fixing a poſt in the ground at each corner of the frame, and by means of holes in the poſt, at ſix inches one above another, in which to place ſtout pegs, one for each poſt, ſo as when the frame wants raiſing, place the pegs in the holes at a convenient height, on which to reſt the bottom of the frame, and according as it requires raiſing again to give more ſcope to the plants, remove the pegs and frame a hole higher; the vacancy or open ſpace at bottom may be matted up cloſe with garden mats, made to open on days occaſionally in the front, to admit the light and air more freely to preſerve the lower leaves, which are apt to drop if much darkened below; and thus by theſe methods my draw the tall-growing plants of this claſs to a handſome ſize.

But

But ſome have a deep frame ſufficient to admit of the talleſt plants growing to the full height, without the trouble of raiſing or adding any additional depth of other frames; but as ſuch a deep frame ſhould be three, four, or five feet depth in the front, and more in proportion behind, it is of importance to have the whole front formed of glaſs-work, in lights made to ſlide beſide one another, to admit the rays of light fully to the lower part as well as to the top of the plants, which if much darkened below, will drop their leaves, and thereby aſſume a naked unſightly appearance; obſerving, ſuch a frame as this is principally to be uſed after the plants have been previouſly forwarded in a former tranſplanting bed, at leaſt half a foot or a foot high, then being potted, and a hot-bed made for this deep frame, plunge the plants therein to their rims in the earth of the bed, or if a bark-bed, into the bark, keeping the top glaſſes cloſe, and give air in the front moderately, and the plants will thus draw up expeditiouſly; giving proper waterings.

Or, where there is the convenience of a fixed glaſs-caſe, may alſo draw the large annuals to a tall handſome growth; it being a boarded or brick-work erection, glaſs in front and top, about ſix, ſeven, or eight feet behind, by five or ſix in front, and ſix or eight wide; the front and ends being glaſs ſaſhes or lights, with the top ſloping from the back to the front, alſo of glaſs-work; the whole made to ſlide over one another; and a pit four, five, or ſix feet wide, being withinſide, the length of the place, and two feet deep, in which to make the hot-bed of dung or tanner's bark; and after the plants have been forwarded in other hot-beds to half a foot, or a foot, or more high, make a hot-bed in the pit of the glaſs-caſe; and having potted the plants in largiſh pots, (24s) one in each, plunge them in the glaſs-caſe hot-bed; ſhading them occaſionally from the ſun

till they have taken good root; and keeping the top glaſſes cloſe; admit air in front moderately, as directed in the deep frame, and ſupply them with water, and they will here grow very large and fine.

In all the foregoing forcing departments, be careful to ſupply plenty of water in hot weather, when the plants are advanced in growth, and as the warm weather in the middle or end of May and in June increaſes, and the plants are arrived to a good ſize, give them larger portions of freſh air accordingly, to inure them by degrees to the open air, againſt the time they are full grown, and the weather warm enough to admit removing them into the full air entirely for the Summer.

In June and beginning of July they will be arrived to nearly full growth, and a full flowering ſtate, when having previouſly by degrees, inured them to the full air, as above adviſed, and the weather being now ſettled in warm, let thoſe that are drawn to the proper ſize be removed in their pots into the full air, firſt in a ſheltered ſituation, well watering them when firſt brought forth, both at bottom and alſo all over their heads to cleanſe them well from duſt; likewiſe place a handſome ſtraight ſtick to each, and tie their ſtems thereto for ſupport; and after remaining in a ſheltered place for a week, may be afterwards removed where required, in their pots, as aforeſaid.

Let all theſe plants in pots be well watered, ſometimes every day in very dry hot weather, or every other day, as you ſhall ſee proper; thoſe in ſmaller pots will require it oftener than in the larger ones; but as the earth in pots dries very faſt at this ſeaſon, let them be examined every day.

It ſhould be obſerved of the *Mimoſa*, or Senſitive Plants of this claſs of annuals, that they are not to be removed into the full air, but always retained under glaſſes, though not neceſſary to have any artificial heat

heat after being raised to full size, but if exposed to the open air they would be deprived of their sensitive quality in which their merit consists; so keep them under glasses, either in a glass-case, or garden-frame, or in a green-house, hot-house, &c.

If any inferior plants remain in the hot-bed unpotted, or are not deserving of pots, they may be transplanted in June into the open borders, in assemblage with the hardy annuals and other border flowers.

To save seed of the tender annuals, let some of the best sorts in pots be marked when in full perfection, and in August or beginning of September, let them be placed either in a glass-case or in some deep garden-frames, or two or more of such placed one upon another, to form a proper depth to contain the taller plants, so as to admit of the glasses being put on every night, and very wet weather, for unless they are thus protected occasionally, they will not ripen seed in due perfection and plenty; but be sure to admit the full sun and air every dry day, and only defend them on nights and bad weather, and they will ripen seeds plentifully in September.

Culture of the Less Tender Annuals in Hot-beds and the open Ground.

The less tender annuals selected under this head, are also exotics of distant warm countries, but are not so tender as the second class, at least the greater part, and only require to be raised and forwarded a little in one or two hot-beds in the Spring, till the middle or beginning of June, when the weather is become settled and warm, then planted out, the greater part into the borders, beds, &c. of the pleasure and flower garden, and some in pots, to move to adorn any place required occasionally.

Though

Though, in defect of hot-beds, a great part of this claſs are ſo tolerably hardy, as they will even ſucceed without any artificial heat at all, if ſowed in a warm border in the middle of April or beginning of May, and will grow freely and be fit to plant out by the middle or end of May or beginning of June, or if ſowed the beginning or middle of April, in a warm border, as aforeſaid, and if defended with hand-glaſſes, or a frame and lights, or even with mats on nights and bad weather, ſupported on hoop-arches, they may be brought forwarder for tranſplantation than thoſe fully expoſed.

However, in places where convenient to have the aid of hot-beds, it is moſt adviſable to uſe them in raiſing the principal ſupply of this claſs of annuals, ſo as to have them brought forwarder for planting out earlier in the ſeaſon, ſo as to blow a month or more ſooner than thoſe raiſed in the open ground; and they may be ſowed any time from about the middle or latter end of March to the middle of April.

For this purpoſe, may either make a moderate dung hot-bed, two feet high, for a one, two, or three-light frame, according to the quantity required; or for a ſmall quantity, may ſow ſome in any hot-bed of Cucumbers, or of the tender annuals, &c. now at work, if there is room; or for want of frames, a hot-bed may be made for ſome hand-glaſſes, for to be defended with an awning of mats on nights; obſerving, in either method, to have the hot-bed earthed with light rich mould ſix inches deep; and in which ſow the ſeed in ſmall drills drawn with the two firſt fingers, from a quarter to half an inch or an inch deep, according to the ſize of the ſeed, and about two or three inches aſunder; ſow the ſeed each ſort ſeparate, and cover them over evenly with fine earth, the depth as above, the largeſt ſeeds deepeſt; or ſome may be ſowed in pots if thought more convenient, more eſpecially if in any hot-bed

hot-bed of other plants, as Cucumbers, Melons, &c. as aforesaid; or that it is intended to move the pots into other fresh hot-beds to bring any particular sorts forwarder.

Having sowed the seed in hot-beds, the culture in the seed-bed is nearly the same as for the tenderest annuals of the second class; cover the glasses every night with mats or long litter, and tilt them a little at times, to pass off the steam arising from the heat of the dung, and if the earth dries, give a little water to promote a free germination in the seed, that the plants may rise regular; when they come up, admit fresh air every day more or less, according to the warmth of the bed and weather, by raising the glasses an inch or two high, or more, or if a covering of mats, take them either entirely off every morning, or turn them up on the south side to admit the sun and light to the plants; and let moderate waterings be applied as often as it shall appear necessary, by the earth becoming dry, for they must not want for moisture in due moderation.

Thus the plants may either remain, the greatest part in this bed till of due size, and the weather is favourable enough in the middle or end of May, for planting them in the open ground, or in the middle or latter end of April or beginning of May, a slight hot-bed may be made in which to prick some of the more curious or principal sorts, to forward them as much as possible, pricking them therein in rows, from four to six inches distance in the row; give a moderate watering, and put on the glasses, &c. and shade them from the mid-day sun the first week, till they have struck good root; giving air daily and occasional waterings; or, if in want of frames and glasses, a hot-bed, as above, may be defended on nights and bad weather, with a shelter of mats, supported on arches of hoops, &c. across the bed; and in either of these beds the plants remaining a month or six weeks, will be well advanced

vanced in growth, and may then be taken up with balls of earth to the roots, and planted where they are to remain for flowering, either in the borders, &c. or ſome in pots.

But as to thoſe which remain in the ſeed-bed for the general ſupply, and where not convenient to prick out the whole in a hot-bed, as above, they ſhould in May, as ſoon as the weather is tolerably ſettled and warm, have a large quantity thinned out in moiſt weather, and planted, ſome at once, about the borders, &c. where they are to flower, the lower-growing kinds placed toward the front, and the taller growths ſtationed more or leſs backward, according to their height; giving water directly and till rooted: others plant in four-feet-wide nurſery-beds of light good earth, alſo in the natural ground; or ſome likewiſe in beds of natural earth, defended with frames and lights, or to have occaſional ſhelter of mats on nights; in all of which nurſery-beds plant them in rows ſix inches aſunder, and directly water them; repeating the waterings frequently, if dry weather, till they have taken good root; alſo an occaſional ſhade of mats to keep off the ſun at firſt planting for a few days, to ſome of the principal kinds in nurſery-beds, will be of much advantage; and after having a month or ſix weeks growth in theſe beds, they will be well advanced, and ſome will be arrived to flowering, ſufficient to diſcover their properties; diſtinguiſhing the doubles from the ſingles of thoſe which produce double and ſingle flowers, when the doubles only, and others of good properties, ſhould be ſelected for tranſplanting into the places where they are finally to remain; taking the whole up with balls about the roots, and plant them with the balls entire, in the places allotted, or in pots, &c. giving plenty of water, and afterwards till they have rooted in the ground.

Some

Some ſorts, ſuch as the Ten-week Stocks and Annual Wall-flower, ſhould always be planted out finally from the ſeed-bed at once where they are to remain, while they are young, for having naked woody roots, they will not take root well if removed when much advanced in growth.

After this claſs of annuals are all planted out for good, the principal culture is, to give water in dry weather when newly planted, till they have taken freſh root; keep them clean from weeds; and, according as the taller-growing kinds riſe in height, and ſeem to require ſupport, let ſticks be placed to them for that purpoſe, one to each plant, and their ſtems tied thereto in a neat manner; let alſo the climbing kinds have ſupport of bruſhy ſticks for them to aſcend upon in an upright growth; and as ſome ſorts branch out in a rambling manner, ſuch as the French and African Marigolds, Chryſanthemums, &c. they ſhould be trimmed to order, by cutting off the lower and moſt rambling branches, forming a clean ſtem below of ſix or eight inches; and alſo trim the head occaſionally where very irregular.

Moſt of this claſs of annuals afford ſeed abundantly, without much trouble, in July, Auguſt, and September, when let a ſufficiency of the heads and pods as they ripen be gathered, from which to ſave ſeed enough for next year's uſe.

According as the different plants are paſt flowering, and have ripened ſeed ſufficient for the ſupply required, let them be wholly pulled up root and top, as theſe ſorts never ſurvive the Winter to blow again.

THE GREEN-HOUSE; ITS DESCRIPTION, UTILITY, LIST of GREEN-HOUSE PLANTS, AND GENERAL MANAGEMENT.

A Green-houſe ſhould generally be erected in the pleaſure ground, or any ornamental garden diſtrict where convenient, in a ſheltered ſituation, full to the ſouth ſun, and commonly ranged eaſt and weſt, with the front formed almoſt wholly of glaſs ſaſhes facing the ſouth; deſigned as a conſervatory or Winter reſidence for numerous tender exotics, collected from the ſouthern parts of Europe and other warm climates, for variety and curioſity, and which will not live in this country in the open air all the year, only in the Summer, from May till October, being unable to endure our rigorous Winters without protection of this department: which ſhould be conſtructed of brick or ſtone-work, &c.

hind, and having the front of moveable glaſs frames or ſaſhes, as aforeſaid, and ſometimes alſo part glaſs at top, inclined to the ſun ſo as to admit all poſſible benefit of the ſun and light in the Winter ſeaſon, whereby the plants may be continued all Winter in full verdure, health, and beauty; and thoſe requiring this protection are very conſiderable, as appears by the catalogue arrangement of green-houſe plants, exhibited under this head.

As to the form and dimenſions of a green-houſe, it is commonly of an oblong-ſquare, ranging lengthways eaſt and weſt, with the front full to the ſouth; and in dimenſions, may be from ten to fifteen, or twenty feet wide, the length, from ten, or twenty, to fifty or an hundred feet or more, in proportion to the quantity of plants; and in height, may be from eight or ten feet in the front, to ten, twelve, or fifteen, or more, behind, where there are tall-growing plants; having the whole front of upright glaſs ſaſhes, and ſloping glaſſes above; or only ſaſhes in front, and wholly tiled or ſlated at top.

This building may have the walls of brick or ſtone, ſometimes they are conſtructed of wood or lath and plaiſter; but brick or ſtone-work, eſpecially for the back wall, is conſequently the moſt eligible to reſiſt the ſeverity of the froſt and piercing northerly blaſts, but have the front the greater part of it glaſs-work in moveable ſaſhes, ranging in two tiers, from within a foot of the ground as high as the ceiling, made to ſhove either up or down or beſide one another, for the admiſſion of freſh air; may alſo have a range of inclined ſaſhes above, reaching from the top of the front ſloping five or ſix feet towards the back, joined up to the tiled or ſlated roof behind, &c. to admit the full power of the ſun and light equally in every part of the houſe; having a glaſs door in the middle of the front, or at one end: and it will be very adviſeable to have a flue or funnel for occaſional fire heat, ranging either

ther along the inner-ſide of the back and end walls, or along the front wall, or under the floor along by the front, in one or two returns, proceeding from a furnace or fire-place withoutſide at once, which will be of great utility for the convenience of making gentle fires occaſionally on nights in ſevere froſts, or ſometimes to expel damps in cold, raw, foggy weather, and will thus prove a great preſervative to the plants in very unfavourable Winters: when the building is erected, let all the inſide walls be white-waſhed, and the wood-work painted white in oil-colour within and withoutſide; the whole ſhould generally be completed in Summer or Autumn, time enough to be well dried before the time the plants are to be houſed.

The collection of green-houſe plants is very conſiderable, conſiſting both of tree and ſhrub kinds of a woody and ſucculent nature, and of many herbaceous, fibrous-rooted, bulbous and tuberous-rooted perennials, the whole both trees and ſhrubs, ſucculents and herbaceous kinds, being moſtly evergreen, retaining their leaves the year round, eſpecially all the woody tribe and ſucculents; the woody exotics, conſiſting of the tree and ſhrub family, are by far the moſt conſiderable in this claſs, are durable in root, ſtem, and branches, and moſtly remain in leaf and verdure the year round, affording a great variety in their different growth, foliage, flowers, &c. and the ſucculent plants, being ſuch as have either thick fleſhy ſtalks and leaves, full of ſuccus, ſap, or humidity, or conſiſt of leaves only of a fleſhy, ſucculent nature, are of various ſingular growths, ſome ſorts growing with erect durable ſtalks, crowned by heads of leaves, others having trailing ſtems and branches, and ſome none at all, producing heads of leaves immediately on the crown of the root; and in moſt ſorts the leaves remain all the year; and in ſome ſorts, as Aloes, &c. the ſame leaves abide ſeveral years: as to the herbaceous family,

the plants are alſo of various growths, but moſtly renew their ſtalks and leaves annually, and many of them flower ornamentally, both of the fibrous and bulbous-rooted tribe.

So that the green-houſe plants afford a great diverſity of very curious exotics, natives of diſtant countries; all of which muſt always be kept in pots here, in order for removing into the green-houſe every Winter, and into the open air in Summer.—See the different ſorts in the following arrangement, each ſpecies under its proper genus or family, agreeable to the botanic characters of the flowers, which conſtitute the claſſes and genera, determining all plants having flowers of the ſame character, to be ſpecies of one genus.

ACHILLIA—Millfoil—Ægyptian Millfoil. (Herbaceous.) By ſlips and off-ſets.

AGAVE——Great American Aloe——Common Branching-ſtalked——Variegated-leaved Branching—Virginia Simple-ſtalked——Viviparous, or Childing Agave. (Very large ſucculents.) By ſuckers.

ALBUCA—Baſtard-Star of Bethlehem—Major, or Greater Spear-leaved—Minor, or Leſſer Awl-leaved. (Herbaceous.) By off-ſets.

ALETRIS—*Aletris*, or Guinea Aloe—Fragrant, or Stalky Tree-Aletris——Hyacinth-flowered Stalkleſs. (The firſt ſhrubby-ſtalked, the ſecond herbaceous.) By off-ſets and ſlips.

ALOE—Common African Aloe—compriſing the Mitre-ſhaped—Plaited, or Fan Aloe—Succotrine Aloe—Sword-ſhaped Tree-Aloe—Tongue-leaved ——Pearl

——Pearl Tongue Aloe——Diſtichous, or Soap-coloured Aloe——Warted Aloe, Carinated, or Keel-ſhaped—Spiral Aloe——Partridge-breaſted Aloe—Cuſhion Aloe—Hedgehog Aloe—Viſcous, or Triangular Aloe—Upright Pentangular Aloe—Dwarf Pearl Tongue Aloe—Dwarf Cobweb Aloe—Iris Uvaria Aloe. (Succulent; ſome with ſtems ſeveral feet high, others not above two inches from the ground.) By ſuckers.

AMARYLLIS—Compriſing the Guernſey Lily—Belladonna Lily—Atamaſco Lily—Cape Lily—Long-leaved Æthiopian Lily——Oriental Lily. (Herbaceous, and bulbous-rooted.) By off-ſets.

AMBROSIA——*Ambroſia*——Shrubby Ambroſia. (Shrubby.) By layers and cuttings.

AMELLUS——Cape Starwort. (Shrubby.) By cuttings.

ANAGYRIS *fœtida*——Stinking Bean Trefoil. (Shrubby.) By layers and cuttings.

ANTHEMIS *maritima*—Sea Chamomile. (Herbaceous.) By ſlips.

ANTHERICUM—Spiderwort—Shrubby—Aloe-leaved—Aſphodel-leaved. (The firſt ſhrubby, the others herbaceous.) By off ſets.

ANTHOLIZA—*Antholiza*—Ringent, or Gaping-flowered—*Cunonia*, or Perſian Straight-flowered—*Meriana*, or Funnel-flowered. (Herbaceous and bulbous.) By off-ſets.

ANTHOSPERMUM *Æthiopicum*——Æthiopian Amber Tree. (Tree.) By ſeed, layers, and cuttings.

ANTHYL-

ANTHYLLIS—Kidney Vetch—Barba Jovis, Jupiter's-beard, or Silver Bush—Variable-leaved—*Cytisoides*, or Cytisus-leaved—*Erinacea*, or Thorny *Anthyllis*. (All shrubby.) By seed, layers, &c.

ANTIRRHINUM—Snap-dragon—Black-flowered of Gibraltar—Variegated-flowered Major. (Herbaceous.) By cuttings and slips.

ARALIA *arborea*—Tree *Aralia*. By seed, &c.

ARCTOTIS—*Arctotis*—Acaulious, or Stalkless of the Cape—Superb Æthiopian—Plantain-leaved African——Rough-leaved Æthiopian——Rough-leaved Orange flowered. (Herbaceous.) By off-sets, slips, seed, &c.

ARISTOLOCHIA——Birthwort——Evergreen of Creta—Greater Climbing Spanish—Tree American—Odoriferous American——Serpentaria, or Serpent-rooted Virginian. (The first four shrubby, the last herbaceous.) By roots, seed, &c.

ARUNDO—Reed—Variegated Portugal. (Herbaceous.) By bottom off-sets.

ASCLEPIAS *fruticosa*——Shrubby Swallow-wort. (Shrubby.) By cuttings and layers.

ASCYRUM—St. Andrew's-cross——Hypericum-leaved Dwarf—Hairy-leaved Upright. (Shrubby.) By seed, slips, cuttings, &c.

ASPALATHUS—African Broom—White, or Silvery—Heath-leaved——Thyme-leaved——Five-leaved—Pinnated-leaved—Cretan Wedge-leaved. (Shrubby.) By seed, slips, &c.

ASPARAGUS—'Sparagus (Shrubby kinds)—Reflexed-branched——Declinated-branched——Acute Stiff-

Stiff-leaved—White Reflexed-thorned Portugal —Asiatic Erect-stalked—Falcated Sword-leaved of Ceylon—Long-shooted of Ceylon. (All shrubby.) By seed.

ASPHODELUS *fistulosus*—Fistular-leaved King's-spear——Branching, with sword leaves——Unbranching Sword-leaved. (Herbaceous.) By off-sets.

ASTER *fruticosa*—Shrubby Starwort. By cuttings and slips.

ASTRAGALUS *Tragacantha*——Tragacanth, or Goat's-Thorn. (Shrubby.) By layers, cuttings, &c.

ATHANASIA——Goldy-locks——Three-pointed-leaved——Samphire-leaved——Downy-leaved——Crenated-cupped——Dentated-leaved. (Shrubby.) By seed, cuttings, layers, &c.

ATRAGENE—*Atragene*——Alpine Doubly-sawed Ternate-leaved—Cape Dentated Ternate-leaved. (Undershrubby.) By seed, cuttings, layers, &c.

ATRAPHAXIS *Udulata*————Waved-leaved. (Shrubby.) By seed, cuttings, layers, &c.

ATROPA—Deadly-Nightshade—Shrubby of Spain —Tree-like of America. (Shrubby.) By seed, cuttings, &c.

BACCHARIS—Ploughman's Spikenard—Jesuit's-bark-leaved————Oleander-leaved. (Shrubby.) By seed, cuttings, layers, &c.

BERBERIS——Berberry——Cretan Box-leaved. (Shrubby.) By seed, cuttings, &c.

BIGNONIA

BIGNONIA—Trumpet-flower——Peruvian Ash-leaved—Three-leaved Vera-crucian—Indian—Blue-flowered Carolinian.———But are rather of the hot-houſe temperature, which ſee. (Shrubby.) By ſeed, cuttings, &c.

BOSEA *Yervamora*—Yervamora, or Golden-Rod Tree. (Tree or ſhrubby.) By cuttings, layers, and ſeed.

BUBON—Macedonian Parſley—Common of Macedonia—Galbaniferous of Æthiopia—Gum-bearing Æthiopian. (The firſt herbaceous, the other two ſhrubby.) By off-ſets, ſlips, cuttings, and ſeed.

BUPHTHALMUM—Ox-eye—Shrubby Smooth-leaved——Tree-like Downy-leaved——Cape Recurved-leaved Shrubby—Maritime Herbaceous-ſtalked, with alternate leaves. (Firſt three ſhrubby, and the other herbaceous.) By cuttings, layers, ſlips, off-ſets, &c.

BUPLEURUM—Hare's-ear—Long-leaved—Falcated-leaved—Shrubby Oval-leaved——Shrubby Linear-leaved——Two-formed-leaved, being different in Summer from the Winter——Hairy-leaved. (Two firſt herbaceous, the reſt ſhrubby.) By off-ſets, ſlips, layers, cuttings, &c.

CACALIA—Foreign Colt's-foot—Ficoides-leaved, or Baſtard Ficoides—*Kleinia*, or Oleander-leaved—*Anteuphorbium*. (Shrubby ſucculents.) By cuttings.

CACTUS *Opuntia*, or Indian Fig—Common Oval Jointed—Globular Jointed. (Succulent.) By cuttings.

GALEN-

CALENDULA—Marigold—Shrubby of the Cape—Grafs-leaved African—Naked-ftalked African. (Shrubby and herbaceous.) By cuttings and flips.

CALLA *Æthiopica*, or Æthiopian Arum. (Herbaceous.) By feed, off-fets, &c.

CALLICARPA *Americana*.

CAMPANULA, or Bell-flower—American *Campanula*—Canary *Campanula*. (Herbaceous.) By roots, &c.

CASSINE—Hottentot Cherry——*Maurocenia*, or Hottentot Cherry—*Peragua*, or Cape Phillyrea. (Shrubby.) By layers and cuttings.

CELASTRUS—Staff Tree—Myrtle-leaved Virginian—Pyryacantha-leaved African—Box-leaved African. (Shrubby.) By layers and cuttings.

CENTAUREA—Centaury—Ragufian Silvery——Evergreen Portugal—Silvery of Creta—*Cineraria*, or White-leaved Italian, with purple flowers—Shrubby of Creta. (Herbaceous, the laft fhrubby.) By parting-roots, off-fets, flips, and cuttings.

CERATONIA *Siliqua*, or Carob Tree, or St. John's-bread. (Shrubby.) By feed, layers, and cuttings.

CHENOPODIUM—Wild Orach—Multifid-leaved Shrubby. By flips, &c.

CHIRONIA—African Centaury—Shrubby Capfular-bearing—Shrubby Berry-bearing—Linear-leaved

leaved (Herbaceous.) By slips, layers, off-sets, and seed.

CHRYSANTHEMUM—*Chrysanthemum*—Shrubby of Canary—Floscular-flowered of Crete—Pectinated-leaved. (Undershrubby and herbaceous.) By slips, cuttings, and root-off-sets.

CHRYSOCOMA—Goldy-locks—*Coma-aurea*, or Common Shrubby—Nodding-flowered Undershrubby—Ciliated-leaved Undershrubby—Opposite-leaved Shrubby—Rough-leaved. (Shrubby.) By cuttings, slips, and layers.

CINERARIA—Ragwort—Geum-leaved African—Amelloides, or Amellus-leaved——Flax-leaved. (Shrubby.) By slips, layers, and cuttings.

CISTUS——Rock-Rose, or *Cistus*——Sea Purslane-leaved—Poplar-leaved—Hairy-leaved—Cretan Gum Cistus—Bay-leaved—Sage-leaved—Hoary-Ladaniferous, or True Gum-bearing. (Shrubby.) By cuttings, &c.

CITRUS—Citron, Lemon, and Orange Trees—Common Citron Tree—Lemon Tree; comprising the Common, the Variegated-leaved, Double-flowered, and the Thorny, or Lime——Orange Tree; comprehending the Seville Orange, China Orange—Golden-striped-leaved—Silver-striped-leaved—Willow-leaved——Myrtle-leaved——Curled-leaved—Dwarf Nutmeg Orange—Double-flowered—Shaddock, or Great-fruited. (Tree and shrub kinds.) By seed may raise young trees for stocks, &c. to bud upon; and in order to continue the different varieties; and to have early and improved bearing trees of the desired kinds, must propagate chiefly by budding

budding the ſorts intended upon ſeedling ſtocks, of any of the ſpecies and varieties of this genus; alſo occaſionally by inarching.——See *budding and inarching* in the *propagation of hardy trees and ſhrubs*.

CLIFFORTIA—*Cliffortia*—Holly-leaved—Ruſcus-leaved—Polygonatum-leaved—Trifoliate-leaved. (Shrubby.) By ſeed, cuttings, and layers.

CLUTIA—*Clutia*—*Alaternoides*, or Linear Spear-leaved *Clutia*—Oval Entire-leaved—Lanceolate-leaved. (Shrubby.) By layers, cuttings, and ſeed.

COLUTEA *fruteſcens*, or Shrubby Scarlet Bladder Senna. By ſeed, layers, &c.

COMMELINA—*Commelina*—Upright Virginian—African Trailing—Tuberous-rooted of Mexico. (Herbaceous.) By ſeed, root-off-ſets, ſlips, &c.

CONVOLVULUS—*Convolvulus*, or Bindweed—Canary Perennial-ſtalked, or Shrubby—Malabar Smooth-leaved——*Dorychnium*, or Paniculated-ſtalked Shrubby Eaſtern——*Cneorum*, or Silvery Spaniſh—Linear-leaved Silky Spaniſh. (Shrubby and herbaceous, with trailing ſtalks.) By ſeed, ſlips, cuttings, off-ſets, &c.

CONYZA *candida*, or White Fleabane. (Underſhrubby.) By ſeed, ſlips, and off-ſets.

CORONILLA—Jointed-podded Colutea—Valentian Greater Multiflorous—Glaucous-leaved——Silvery of Crete—Ruſh-leaved of Montpelier. (Underſhrubby.) By ſeed, ſlips, and layers.

COTYLEDON—Navelwort—Orbicular-leaved—Hemiſpherical, or Semi-globular-leaved—Spatulate-leaved. (Succulent.) By cuttings, heads, &c.

CRASSULA—Leſſer Orpine—Scarlet-flowered—Perfoliated-leaved—Tetragonal-leaved—Purſlane-leaved—Orpine-leaved. (Succulent.) By ſlips, heads, cuttings, and ſeed.

CROTON *ſebiferum*, or Tallow Tree of China: By ſeed, &c.

CUNONIA *Capenſis*, or Cape *Cunonia*. (Shrubby.) By ſeed, cuttings, &c.

CUPRESSUS *Juniperoides*, or Juniper-leaved Cape Cypreſs Tree. By ſeed, layers, and cuttings.

CYCLAMEN—*Cyclamen*, or Sow-bread—Indian Nodding-flowered—Sweet-ſcented Indian. (Low herbaceous.) By ſeed, root-off-ſets, &c.

DIGITALIS——Fox-glove——Canary Shrubby-ſtalked——Obſcure Purple-flowered. (Shrubby and underſhrubby.) By ſlips, cuttings, and ſeed.

DIONÆA *muſcipula*, or Venus Fly-trap. (Herceous; a moſt curious ſenſitive plant.) By parting-roots, &c.

DIOSMA—African Spiræa—Oppoſite-leaved——Hairy-leaved—Red-flowered—Heath-leaved——Ciliated-leaved—Lanceolate Smooth-leaved——Uniflorous, or One-flowered—Crenated-leaved—Oval-leaved. (Shrubby.) By ſlips, ſuckers, layers, and ſeed.

DRACOCEPHALUM *canarienſe*, or Canary Dragon's-head—commonly called Balm of Gilead. (Herba-

(Herbaceous, with abiding ſtalks.) By ſeed and cuttings.

EBENUS *creticus*, or Cretan Ebony. (Tree or ſhrubby.) By ſeed, layers, and cuttings.

EMPETRUM *album*, or White Upright Crowberry. (Shrubby.) By ſeed, ſlips, layers, &c.

ERICA—Heath——Three-flowered——Tubulous-flowered—Beeſom Montpelier Heath——Curve-flowered—Scarlet-flowered—Five-leaved—Empetrum-leaved—Green-purple-flowered. (Shrubby.) By ſlips, ſuckers, layers, and ſeed.

ERINUS *alpinus*, or Alpine *Erinus*. (Herbaceous.) By off-ſets, ſlips, &c.

ERIOCEPHALUS, or African Southernwood—African Corymboſe-flowered—Racemoſe-flowered. (Underſhrubby.) By ſeed, ſlips, layers, &c.

EUPHORBIA—Spurge—*Antiquorum*, or Euphorbia of the Ancients, or Triangular Spurge—Canary Quadrangular—Officinal Many-angled, with ſpines in pairs—Cereus-ſhaped Many-angled, with ſingle ſpines—Seven-angled——Oleander-leaved—Twiggy Volubilate-climbing—*Tithymaloides* Euphorbium—Myrtle-leaved—Bird-cherry-leaved—*Caput-meduſæ*, or Meduſa's-head—Spinoſe, or Prickly—Different-formed-leaved—*Characias*, or Red-purple Spurge—Amygdaloides, or Almond-leaved, the variegated—Wood Tithymalus, with lunated flowers. (Moſtly ſucculent, both of herbaceous and ſhrubby kinds.) By cuttings, ſlips, off-ſets, ſuckers, ſeed, &c.

FRITILLARIA *regia*, or Royal Crown, greater and leſſer. (Herbaceous.) By root-off-ſets.

GALENIA *africana*—African Galenia. (Shrubby.) By layers, ſlips, cuttings, and ſeed.

GENISTA *canarienſe*—Canary Broom, or *Cytiſſus*. (Shrubby.) By ſeed, cuttings, and layers.

GERANIUM—Crane's-bill, or *Geranium*—(Shrubby kinds)—Horſe-ſhoe-leaved; compriſing the Common Green, the Variegated-leaved, Silver-ſtriped-leaved, Gold-ſtriped-leaved, and Flame-coloured-flowered—Scarlet Geranium——Hood-ſhaped, or Hollow-leaved——Gouty-ſtalked——Fleſhy-ſtalked—Flame-red-flowered—Angulated-leaved——Birch-leaved——Peltated, or Shield-ſhaped-leaved—Vine-leaved——Sorrel-taſted——Butterfly-ſhaped-flowered—Capitated, or Headed-flowered—Rough Multifid-leaved—(Herbaceous kinds)—Lady's-Mantle-leaved—Odoriferous, or Sweet-ſmelling——Gooſeberry-leaved——Alcea-leaved—Coriander-leaved——Myrrh-leaved——Lobated-leaved—Hairy Lobated-leaved—Geranium Triſte, or Spotted Night Smelling——Striated-leaved—Grandiflorous—Tabulare-leaved—Proliferous Geranium, with pinnated leaves—Auriated, or Ear-leaved, Long-leaved, Wood-Sorrel-leaved. (Shrubby and herbaceous, as diſtinguiſhed above.) By ſeed, cuttings, parting-roots, &c.

GLADIOLUS *triſtis*, or Dark-flowered Sword Lily. (Herbaceous.) By root-off-ſets.

GNIDIA—Gnidia—Pine-leaved—Downy-leaved—Oppoſite-leaved. (Shrubby.) By layers, cuttings, ſeed, &c.

GORDONIA

GORDONIA *Lasianthus*—Lasianthus, or Loblolly-Bay. (Shrubby.) By layers, cuttings, seed, &c.

GORTERIA—*Gorteria*—Stiff-leaved——Ciliated-leaved——Shrubby Holly-leaved——Squarrose-cupped. (Woody.) By seed, layers, cuttings, &c.

GREWIA——*Grewia*——Occidental Sub-oval-leaved——Oriental, or Indian Sub-lanceolate-leaved. (Woody, or shrubby.) By seed, layers, cuttings, &c.

HALLERIA *lucida*, or Shining-leaved *Halleria*. By seed, slips, &c.

HELIOTROPIUM—Turnsole—Peruvian Lancet-oval-leaved——Shrubby Linear Spear-leaved of Jamaica. (Shrubby, or Woody.) By seed, layers, cuttings, &c.

HERMANNIA—*Hermannia*—Altheæ-leaved——Alder-leaved——Hyssop-leaved——Gooseberry-leaved—-Lavender-leaved——Pinnatifid-leaved. (Woody.) By seed, slips, layers, cuttings, &c.

HYOSCYAMUS *aureus*, or Golden Henbane. (Herbaceous.) By seed, slips, and off-sets.

HYPERICUM—St. John's-wort—*Hypericum balearicum*, or Majorcan St. John's-wort—Monogynious, or One-styled of China—Rough-stalked Arabian. (Woody, or shrubby.) By seed, cuttings, layers, suckers, &c.

JASMINUM—Jasmine—Great-flowered of Catalonia—-Odoriferous Yellow Indian—-Azorian, or

White Indian. (Woody.) By layers, cuttings, and budding.

IBERIS—Shrubby Candy Tuft—Ever-flowering of Sicily—Evergreen of Crete—Gibraltar Large-flowered—Striped-leaved. (Shrubby and under-ſhrubby.) By cuttings, layers, ſuckers, ſeed, &c.

ILLICIUM *Aniſatum*, or Aniſeed Tree of Japan. By ſeed, &c.

INDIGOFERA——Indigo Plant——True Dying Indigo—Long-cluſtered-flowered. (Underſhrubby and herbaceous.) By ſeed, ſlips, layers, off-ſets, &c.

JUNIPERUS—Juniper—Burmudian Cedar, or Juniper——Barbadoes Juniper, or Cedar. (Woody.) By ſeed, cuttings, &c.

JUSTICIA *Adhatoda*—*Adhatoda*, or Malabar Nut-Tree. By ſeed, &c.

IXIA—*Ixia*—Chineſe, with remote flowers in panicles——Flexuoſe-flowered——Crocus-flowered——Scilla-flowered—Corymbous-flowered—African Torn-cupped—Bulb-bearing—Spotted. (Herbaceous and bulbous.) By off-ſets, &c.

KIGGELARIA *africana*, or African *Kiggelaria*. (Woody.) By ſeed, cuttings, &c.

LANTANA—American Viburnum—*Camera*, or Nettle-leaved—African Alternate-leaved—Sage-leaved African. (Shrubby.) By ſeed, cuttings, layers, ſuckers, &c.

LAVEN-

LAVENDULA——Lavender——Multifid-leaved of the Canaries———Dentated-leaved of Spain. (Shrubby.) By cuttings, &c.

LAVATERA—*Lavatera*—Olbian Tree Mallow—Trilobated-leaved———Portugal Seven-angled-leaved—American Heart-leaved. (Shrubby or abiding-ſtalked.) By ſeed, ſlips, and off-ſets.

LAURUS—Bay—*Camphora* or Camphire Tree—Summer-leaved, or Deciduous Bay——Indian Bay—*Berbonia*, or Carolina Bay. (Trees.) By ſeed, layers, cuttings, budding, and ſuckers.

LINUM——Lint or Flax——Tree Cretan Flax—Shrubby——Broad-leaved Yellow——Maritime of Auſtria. (Shrubby and herbaceous.) By ſeed, cuttings, layers, &c.

LOTUS——Bird's-foot Trefoil——Cretan Shrubby—Mauritian Shrubby—Lotus of St. James's Iſland—Hairy of Narbonne——Upright——*Dorychnum*, or Seſſile Quinate-leaved. (Shrubby and herbaceous.) By ſeed, cuttings, layers, off-ſets, and ſuckers.

LYCIUM—Box-Thorn——African Linear-leaved—Barbary Lanceolate-thick-leaved—Capſular-bearing of Mexico. (Shrubby.) By layers, cuttings, &c.

MARRUBIUM *Pſeudo-Dictamnus*, or Baſtard Dittany of Crete. (Shrubby.) By ſlips, cuttings, &c.

MEDEOLA *aſparagoides*, or Baſtard Aſparagus of Æthiopia——Virginian. (Woody.) By ſeed, cuttings, &c.

MEDICAGO *arborea*, or Tree Medicago, or Moon Trefoil. By ſeed, &c.

MELIA

MELIA—Bead Tree—*Azedarach*, or Common Bipinnated-leaved--*Azidarachta*, or Pinnated-leaved. (Shrubby.) By ſeed, &c.

MELISSA *cretica* or Cretan Balm—Spaniſh Balm. (Underſhrubby-herbaceous.) By cuttings, ſlips, &c.

MELIANTHUS——Honey Flower——Major——Minor. (Herbaceous.) By ſlips, off-ſets, &c.

MENTHA *canarienſis*, or Canary Shrubby Mint, By cuttings, &c.

MESEMBRYANTHEMUM——Fig Marigold——Night-flowering Semi-cylindric-leaved——Quill-ſhaped-leaved——Splendent-ſhining-leaved—Umbellate-flowering——Geniculated-flowering, or flowering in joints—Daiſy-flowered—Barbated, or Bearded-leaved——Emarginate-flowered——Rough-leaved—Tongue-leaved—Twiſted-leaved——Hatchet-leaved——Different-formed-leaved——Horned-leaved——Thick-leaved——Dagger-leaved——Falcated, or Falchion-leaved——Spit-leaved—Cimeter-leaved—Narrow-leaved—Glittering-leaved—Roſtrated, or Beak-leaved—Glaucous-coloured-leaved——Sawed-leaved——Expanded-leaved——Delta-ſhaped-leaved——Two-coloured-flowered—Uncinated, or Hook-leaved—Prickly-branched—Filamentoſe, or Thready—Leather-thong-ſtalked——Minute leaved—Glomerated, or Cluſtered-leaved——Hiſpid-ſtalked——Ringent, or Gaping; compriſing the Dog's-chaps and Cat's-chaps kinds—White-leaved—Downy-hairy-leaved——Eatable-fruited——Tuberous-rooted——Stipulaceous-leaved. (All ſucculents, of various growths and ſizes, and different ſhaped branches and leaves; the ſtalks and leaves moſtly abiding the year round.) By cuttings, &c.

MOREA

MOREA——*Morea*——Channelled-leaved——Rushy Awl-shaped-leaved. (Herbaceous.) By off-sets, slips, &c.

MYRICA—Candle-berry Myrtle—Oak-leaved—Heart-leaved——Trifoliate-leaved——Carolinian. (Woody.) By seed, layers, cuttings, &c.

MYRSINE *africana*, or African Box Tree. By slips, layers, seed, &c.

MYRTUS—Myrtle Tree—Common Myrtle; comprehending the Broad-leaved—Double-flowering Broad-leaved—Upright Small-leaved—Variegated-leaved—Box-leaved—Variegated Box-leaved—Orange-leaved—Rosemary-leaved——Shining-leaved——Broad Three-leaved Jews—Nutmeg-scented—Bird's-nest—Dutch Myrtle——Blotched-leaved. (Woody.) By slips, cuttings, layers, and suckers.

NERIUM—Oleander, or Rose Bay——Common Oleander, the Single Red-flowered—Double-red—White-flowered——Striped-leaved——Acute-leaved. (Woody.) By layers, cuttings, and suckers.

OLEA—Olive Tree——Common European Spear-leaved; comprehending the Broad-leaved and Narrow-leaved——Cape Oval-leaved. By seed, layers, cuttings, budding, &c.

ONONIS—Rest-Harrow—Round-leaved—Curled-waved-leaved——Tridented-leaved——Natrax, or Downy——Viscous Yellow. (Shrubby.) By cuttings, layers, slips, &c.

ORIGANUM—Marjoram—*Dictamnus*, or Dittany of Crete—Dittany of Mount Sipylus—Cretan Marjoram

Marjorana, or Sweet Marjoram. (Underſhrubby and herbaceous.) By ſlips, off-ſets, parting-roots, and the laſt by ſeed only.

OSTEOSPERMUM——Hard-ſeeded Chryſanthemum—Piſiferous, or Pea-bearing—Moniliferous Oval-leaved—Thorny-branched—Holly-leaved. (Shrubby.) By ſeed, cuttings, &c.

OTHONNA—Ragwort——Pectinated, or Comb-leaved——Coronopus-leaved——Wall-flower-leaved—Southernwood-leaved—Tree Othonna—Bulbous, many varieties. (Underſhrubby, ſhrubby and herbaceous.) By ſlips, ſeed, cuttings, ſuckers, &c.

PANCRATIUM—Pancratium Lily, or Lily Narciſſus——Carolinian Linear-leaved——Illyrian Sword-leaved. (Herbaceous and bulbous.) By root-off-ſets

PASSERINA——African Sparrow-wort——Thread-ſhaped——Hairy-ſtalked——Silky Oval-leaved.—Smooth-leaved. (Shrubby.) By cuttings, ſlips, layers, &c.

PASSIFLORA——Paſſion-flower——Incarnate-flowered of Virginia——Yellow-flowered Virginian. (Herbaceous-underſhrubby.) By ſlips, cuttings, off-ſets, ſeed, &c.

PERIPLOCA——Virginia Silk—African Hairy-ſtalked—Small-leaved of the Cape. (Herbaceous.) By off-ſets, ſlips, and ſeed.

PHILADELPHUS—Mock Orange, or *Syringa*—Aromatic-broad-leaved and Narrow-leaved——Shining-

Shining-leaved. (Shrubby.) By ſeed, layers, cuttings, &c.

PHLOMIS—Jeruſalem Sage—*Leonurus*, Lion's-tail, or Scarlet-flowered—Purple-flowered—Nep, or Cat-mint-leaved. (Underſhrubby and herbaceous.) By cuttings, ſlips, off-ſets, ſuckers, ſeed, &c.

PHYLICA—Heath-leaved—Box-tree-leaved—Radiated—Heart-leaved. (Underſhrubby.) By cuttings, ſlips, &c.

PHYLLIS—Baſtard Hare's-ear—Canary, with dentated ſtipula—Indian, with entire ſtipula. (Shrubby.) By ſeed, cuttings, &c.

PHYSALIS—Winter Cherry—Somniferous Shrubby—Flexuoſe Shrubby. By ſeed, cuttings, layers, &c.

PISTACHIA—Piſtachia Nut Tree—Three-leaved of Sicily—True of Perſia and the Indies—*Lentiſcus*, or Maſtic Tree—*Terebinthus*, or Turpentine Tree. (Tree and ſhrub kinds.) By ſeed, cuttings, layers, &c.

POLYGALA *myrtifolia*—Myrtle-leaved Milk-wort. (Underſhrubby-herbaceous.) By ſeed, ſlips, and layers.

POTERIUM *ſpinoſum*—Spinous of Crete. (Shrubby.) By ſeed, layers, cuttings, &c.

PRASIUM *majus*, or Greater Shrubby Hedge Nettle. By ſlips, cuttings, &c.

PROTEA—Silver Tree—Silvery Cape *Protea*—Coniferous, or Cone-bearing, ſeveral varieties. By layers, cuttings, and ſeed.

PSORALEA

PSORALEA—Pinnated-leaved—Prickly-leaved—Cytiſſoide-leaved——Five-leaved Digitated——Glandulous-leaved——Bituminous, or Round-ſpiked. (Shrubby.) By ſeed, layers, cuttings, &c.

PUNICA—Pomegranate—*Granatum*, or Common Pomegranate—Dwarf Pomegranate. (Tree and ſhrub.) By ſeed, ſuckers, layers, budding, &c.

RHUS—Sumach, &c.—Downy-leaved—Smooth-leaved——Narrow-leaved——Shining-leaved. (Woody, &c.) By ſeed, cuttings, &c.

ROELLA—*Roella*——Ciliated-leaved——Netted Prickly-leaved. (Herbaceous.) By ſeed, off-ſets, ſlips, and cuttings.

ROSA—Roſe Tree—*Roſa Indica*, Indian, or China Roſe. By ſuckers, layers, &c.

ROSMARINUS *variegatis*—Variegated, or Striped-leaved Roſemary; compriſing the Silvery and Gold-ſtriped. (Shrubby.) By cuttings, layers, ſuckers, &c.

ROYENA—*Royena*—Shining Rough-leaved——Smooth-leaved—Hairy-leaved. (Shrubby.) By ſeed, cuttings, layers, &c.

RUSCUS——Butcher's-broom——*Hypophylum*, or Alexandrian Laurus, or Bay—Broad-leaved—Androgynous-flowered, or True Alexandrian Bay. (Underſhrubby and herbaceous.) By ſeed, ſuckers, off-ſets, &c.

SALVIA—Sage—Mexican Shrubby Sage—African Shrubby—Yellow-flowered——Canary Halbert-ſhaped-triangular-leaved. (Underſhrubby.) By ſlips, cuttings, ſuckers, &c.

SCABIOSA

SCABIOSA—Scabious—African Cut-leaved—Cretan Cluſtered-leaved—Stiff-leaved Æthiopian—Silvery Eaſtern. (Underſhrubby and herbaceous.) By ſlips, cuttings, off-ſets, ſeed, &c.

SCHINUS, or Peruvian Maſtic Tree—*Molle*, or Sawed-leaved—*Areira*, or the Entire-leaved. By ſeed, layers, cuttings, &c.

SCROPHULARIA——Figwort——Elder-leaved. (Shrubby.) By off-ſets, ſlips, ſuckers, ſeed, &c.

SELAGO *Corymboſa*, or Corymbous-flowered Selago—Pinaſter Whirled-leaved—Spurious Denticled-leaved. (Herbaceous and underſhrubby.) By ſeed, off-ſets, ſlips, cuttings, &c.

SEMPERVIVUM—Houſe-leek—Tree Houſe-leek, or Tree Sedum—Striped-leaved——African——Canary. (Succulents.) By cuttings.

SIDERITIS——Ironwort——Syrian——Canary. (Shrubby.) By ſeed, off-ſets, ſlips, &c.

SIDEROXYLUM——Iron-wood——Thornleſs of Æthiopia—*Lycoides*, or Deciduous-leaved Canadian. (Woody.) By ſeed, layers, cuttings, &c.

SILENE—Viſcous Campion——Shrubby Myrtle-leaved—Giant-ſtalked. (Shrubby and herbaceous.) By ſlips, cuttings, and off-ſets.

SISYRINCHIUM—*Bermudiana*—Greater and leſſer. (Herbaceous.) By ſeed, ſlips, off-ſets, &c.

SMILLAX *excelſa*, or Talleſt Rough Bindweed. By cuttings, off-ſets, &c.

SOLANUM—Nightſhade——Pſeudo *Capſicum*, or Winter Cherry—Apple-fruited African—Indian

Wedge-ſhaped-leaved——Downy of Æthiopia. (Shrubby.) By ſeed, cuttings, &c.

SOLDANELLA *alpina*—Alpine Soldanel. (Herbaceous.) By ſeed, off-ſets, cuttings, &c.

SPARTIUM—Broom——Monoſpermous, or One-ſeeded White Spaniſh——Prickly-branched. (Shrubby.) By ſeed, &c.

STATICE—Thrift, or Sea Pink—Suffruticoſe, or Underſhrubby—Monopetalous of Sicily. (Underſhrubby and herbaceous.) By ſlips, cuttings, and off-ſets.

STRUTHIOLA *virgata*, or Twiggy *Struthiola*. (Underſhrubby.) By ſeed, ſuckers, cuttings, &c.

STYRAX—Storax Tree—Officinal or Common. By ſeed, cuttings, layers, &c.

TARCHONANTHUS *camphorata*, or Camphire-ſcented African Flea-bane. (Herbaceous.) By off-ſets, ſlips, ſeed, &c.

TAXUS—Yew Tree—Nuciferous, or Nut-bearing. By ſeed, cuttings, &c.

TETRAGONIA—Shrubby——Herbaceous. By ſlips, cuttings, &c.

TEUCRIUM—Germander—Fruticant, or Shrubby Spaniſh——Broad-leaved Spaniſh——*Polium*, or Shrubby Mountain Poley—Yellow Mountain Poley—White Mountain Poley, and ſome other varieties—Cretan Narrow-leaved——*Marum*, or Germander Syrian Marum. (Underſhrubby, &c.) By ſlips, cuttings, &c.

THEA

THEA—Tea Tree—Green Tea—Bohea Tea. By ſeed, cuttings, layers, ſuckers, &c.

THYMBRA—Mountain Hyſſop—Verticillated—Spiked. (Shrubby.) By ſeed, ſlips, cuttings, layers, &c.

THYMUS *Maſtichina*, or Maſtick Thyme—Large-headed Portugal—Small-headed—Villoſe-leaved. (Underſhrubby.) By ſeed, ſlips, off-ſets, &c.

TRACHELIUM *cæruleum*, or Blue Throatwort. (Herbaceous.) By ſeed, off-ſets, and cuttings.

TRICHOMANES *canarienſis*—Canary, or Portugal Fern. (Herbaceous.) By off-ſets, &c.

TRIOPTERIS *Jamaicenſis*, or Jamaica *Triopteris*. (Shrubby.) By cuttings, layers, &c.

TROPÆOLUM, or *Naſturtium*—Major Double-flowered. (Herbaceous.) By cuttings, &c.

ULEX *capenſis*, or Cape Furze. (Shrubby.) By ſeed, cuttings, &c.

VERBENA *Bonarienſis*—Talleſt Vervain of Buones Ayres. (Herbaceous.) By ſeed, off-ſets, ſlips, &c.

VITEX—Chaſte Tree—Three-leaved—Chineſe Five-leaved. By cuttings, ſeed, layers, ſuckers, &c.

WACHENDORFIA—Thyrſe-flowered—Panicle-flowered. (Herbaceous.) By off-ſets, ſlips, cuttings, and ſeeds.

XERANTHEMUM, or Eternal Flower—Specious-flowered—Proliferous-flowered—Retorted,

or Reflexed—Imbricated—Hoary. (Underſhrubby.) By ſlips, cuttings, ſeed, &c.

YUCCA—Adam's Needle—Glorioſe Intire-leaved—Aloe Erect-leaved——Dragon's-leaved——Filamentoſe, or Thread-bearing-leaved. (Succulent and ſhrubby.) By off-ſets, ſlips, cuttings, heads, ſeed, &c.

ZYGOPHYLLUM——Seſſile-leaved——*Morgſana*, or, Purſlane-leaved———Prickly Linear-leaved. (Underſhrubby.) By cutting, ſlips, ſuckers, &c.

By the above catalogue, it appears that a very conſiderable family belongs to the green-houſe, and which together effect a fine variety at all times of the year, as being moſtly evergreen, and many are of ſingular beauty and elegance, and others of great curioſity: obſerving, that as in this liſt ſeveral kinds are introduced which are alſo found in the hardy tree and ſhrub collection, &c. theſe being ſuch, which though tolerable hardy for the open ground, are ſometimes liable to be greatly damaged in ſevere Winters, ſo it is proper to keep ſome always in pots to have protection in Winter, and the general culture of green-houſe exotics. And we now proceed to explain the different methods of their propagation or ways of raiſing them, together with their general culture in Winter and Summer; which is fully explained under two heads, viz. Winter and Summer culture; ſo may only juſt obſerve here, that, for one thing, this claſs of plants muſt always be kept in pots, and the large kinds in tubs, for the convenience of removing them in and out of the green-houſe at the proper ſeaſons; they requiring to have the ſhelter of that department from October till May or beginning of June, when they ſhould be removed into the open air for the Summer.——See the *Winter* and *Summer cultivation* under ſeparate heads; but firſt of the methods of propagations as follows.

General

General Propagation of the Clafs of Green-houfe Plants.

The operations of propagating, or manner of raifing the various green-houfe plants, is effected by different methods, as obferved in the hardy trees, fhrubs, and herbaceous plants, fuch as by feed and fuckers, flips of the branches, fide-flips of the root and head, off-fets, layers, cuttings, heads, parting-roots, grafting, budding, inarching, &c. and that in moft of the methods of propagating this clafs of plants, efpecially by feeds, flips, cuttings, or any unrooted plants, it is eligible to affift them moftly with a hot-bed of tanner's bark, in a hot-houfe, ftove, or glafs-cafe, or glafs-pit, &c. or any hot-bed under glaffes, as it will forward them greatly, plunging the pots in the hot-bed, as hereafter: however, in default of fuch conveniences, may alfo try the whole work of propagation in all thefe plants, without that affiftance, allowing fhelter of glaffes, &c. placed either in the green-houfe windows, or under garden-frames, or covered down with hand-glaffes, except in the operation of grafting, budding, or inarching, which muft remain in the green-houfe when firft performed, afterwards placed in the full air in Summer.

The propagation of the tree and fhrub kinds, is fome by feed, others by fuckers from the root; fome by cuttings, flips, and layers of the young fhoots and branches; and fome by grafting, inarching, and budding; all of which may be performed nearly in the fame methods, in each of thefe ways of propagation of the woody plants in this clafs of exotics, as directed for the hardy trees and fhrubs; only it may be obferved, that it is proper to affift the feed, cuttings, flips, &c. of thefe, fometimes with arti-

ficial heat, as obſerved, where there is ſuch conveniences, either a bark hot-bed in a hot-houſe or ſtove, or in any glaſs-caſe, or bark-pit, &c. or dung hot-beds, under frames and glaſſes; and the ſeaſon for performing the ſeveral methods of propagation, is principally in the Spring and early part of Summer: ſow the ſeeds chiefly in March or April, which is alſo a ſucceſsful ſeaſon to take off and plant the ſuckers, ſlips, and cuttings, alſo to make layers; likewiſe the grafting and inarching muſt be performed in the Spring, about March, though budding is more eligible than grafting in this claſs, and is performed in July and Auguſt, and by which the different varieties of Oranges, Lemons, Citrons, &c. are commonly propagated upon ſtocks of their own kind raiſed from ſeeds, and ſo of the other ſorts propagated by budding: though the greater part of the green-houſe tree and ſhrub kinds, are more commonly propagated either by ſeed, ſlips, cuttings, layers, and ſuckers, than by grafting, inarching, and budding, but by the latter method the different varieties of Oranges, &c. are always propagated, as juſt obſerved.

In the propagation of any of the green-houſe tree and ſhrub kinds, either by ſeed, cuttings, or ſlips of the young ſhoots of the branches, or ſuckers from the root, layers, &c. ſow and plant them in pots of light rich earth, in Spring; or cuttings, ſlips, or layers, will alſo ſucceed in Summer, about May or June; obſerving, in the Spring-planting of cuttings, ſlips, &c. to chuſe the young ſhoots of the former year, if before June, after which, may take the tender ſhoots of the ſame year, chuſing the ſide-ſhoots of moderate growth, cutting or ſlipping them off in lengths of from three or four to five or ſix inches, ſtrip off the lower leaves, and plant them in pots, as above-ſaid, ſeveral, or many in each, if large pots, putting them in within an inch or two of the top; give water, and if there is any convenience

nience of any bark-bed in a hot-houſe, ſtove, or glaſs-pit, &c. or a bark or horſe dung hot-bed, under garden-frames and glaſſes, it is adviſable to plunge the pots in the bark-bed, &c. both ſeed-pots and thoſe containing the cuttings or ſlips, &c. as the heat will greatly forward the germination of the ſeed, and make the cuttings, ſlips, ſuckers, layers, &c. quickly emit roots below and puſh ſhoots above; granting them occaſional ſhade from the hot ſun: or the pots may be plunged in a dung or tan hot-bed, under oiled paper-frames, in April, May, or June, they will ſucceed remarkably well, the paper affording both proper ſhelter, and being oiled, is rendered pellucid to admit the light and ſun's warmth in a ſufficient degree, and at the ſame time ſhade from the ſun: in all of which give good waterings as occaſion requires; though the cuttings, ſlips, and layers of many ſorts of this tribe of green-houſe exotics, will alſo ſucceed tolerably without artificial heat if the quite young ſhoots are planted in April, May, June, and July, and covered with hand-glaſſes, or under a frame and glaſſes, &c. and ſhaded from the mid-day ſun, and frequently watered; or when covered cloſe down with hand-glaſſes, it will promote a more expeditious rooting; however, by the aſſiſtance of a hot-bed, &c. the whole of this propagation may be greatly forwarded, and more effectually performed.

Great quantities of Myrtles in particular, are raiſed about London, by cuttings and ſlips of the young ſhoots, for the ſupply of the markets; and by aſſiſtance of a bark-bed or other hot-bed heat, may plant both in Spring of the former year's ſhoots, and in Summer and Autumn, in June, July, and Auguſt, of the ſhoots of the ſame year, chuſing the robuſt ſide-ſhoots, of from three or four to five or ſix inches, though thoſe of three or four inches are more commonly preferred, either cutting them off with a knife, or the ſmall ones ſlip off

with

with the thumb and finger; ſtrip off the under leaves, and plant them in large wide pots, many in each, putting them in within an inch or two of the top, and one or two inches aſunder, or if large cuttings allow more room, giving directly a moderate watering; and generally, where convenient, plunge them either in the bark-bed in a hot-houſe, ſtove, or glaſs-pit; or in want of thoſe conveniences, may be placed in any hot-bed, under frames and lights; giving frequent waterings, and occaſional ſhade from the hot ſun in the Summer-planted ſlips or cuttings particularly; they will thus all root freely in a ſhort time the ſame year, and be fit to plant out in ſeparate pots in Autumn or next Spring, &c.

Or, in defect of hot-beds, plant ſome Myrtle cuttings of the ſmall young ſhoots of the laſt Summer, in March or April, or the young ſhoots of the ſame year, planted in June and July; in either caſe, planting them in pots, as above, and cover them down with a hand-glaſs, or placed under a ſhallow garden-frame, covered with the lights, or under oiled-paper; giving proper waterings; they will many of them root tolerably, though not near ſo expeditious and effectual as when aſſiſted by artificial heat.

But cuttings of Geraniums, will often root tolerably well without the aid of heat, being planted in Spring or Summer, in pots, and placed under glaſſes, &c. though if the pots of cuttings are plunged in a bark or hot-bed, they will root conſiderably quicker.

Alſo many of the ſucculent ſlips and cuttings will root without heat, when planted in the Summer time particularly; but more freely when aſſiſted by heat at bottom.

Grafting is ſometimes practiſed in propagating ſome of the tree and ſhrub kinds.—See *grafting* under article *hardy trees and ſhrubs*.

The budding of any of the green-houſe tree and ſhrub kinds, ſuch as Oranges, Lemons, Citrons, the

the curious ſorts of Jaſmines, &c. muſt be performed principally in the end of July or beginning of Auguſt, having previouſly raiſed ſtocks from the ſeed, eſpecially of the Oranges, Lemons, &c. ſowed in pots, and plunged in a hot-bed, and when the plants are three or four inches high, pricked ſeparately in pots, and plunged alſo in a bark-bed, &c. under glaſſes, and thus forwarded for a Summer or two, to two or three feet high or more, then budded, placing the pots in a glaſs-caſe or green-houſe, for two or three weeks, defended from the weather, but give plenty of free air, and ſhaded from the mid-day ſun till the buds unite with the ſtock, then removed to the full air till the end of Summer, and if in Spring following, in March, the pots are plunged in a bark-bed in a glaſs-caſe, &c. it will greatly aſſiſt the ſhooting of the buds, and forward them in a ſtrong growth; giving air and water.—See *budding* under the head *hardy trees*, &c.

Inarching Oranges or ſome other kinds, is ſometimes practiſed to raiſe a good-headed tree as ſoon as poſſible, as if the branch of a tree or ſhrub is inarched in the Spring, about April, upon any ſtock of the ſame family, it will be united by Auguſt, fit to cut off from the parent plant, and thus have a new tree raiſed in four months.——See *inarching* in the article *hardy trees*.

The propagation of ſucculent plants of this collection is ſometimes by ſeed; and very commonly by ſuckers and off-ſets of the root, ſide-off-ſets of the head and ſtem, and by cuttings of the ſtem, head, and branches; generally ſow the ſeed in Spring, and the ſuckers and off-ſets of the root, head, or ſtem, may be detached from the parent plant, either in Spring, Summer, or early part of Autumn, when they can be obtained of proper growth; and in ſuch as furniſh no ſuckers, off-ſets, or ſide-ſlips; muſt be propagated by cuttings of the ſtalks, branches, or heads, according to their order of growing;

growing; obſerving each method as below, both in ſowing the ſeed, and in ſuckers, cuttings, &c.

Sow the ſeeds of any of the ſucculent kinds, in April, in pots of dry light ſoil, and plunge them in a hot-bed, under glaſſes; or if no hot-bed, defend them either in the green-houſe near the windows, or under ſome frame and lights, or hand-glaſſes, but will ſucceed conſiderably better if aſſiſted by heat, give very moderate waterings.

As to ſuckers of ſucculent plants, moſt of the Aloe tribe, and ſome other ſimilar ſucculent kinds propagate plentifully by that method, which riſing from the roots in Spring and Summer, may either be taken off the ſame year or next Spring, or beginning of Summer or Autumn, ſlipping them clean to the bottom, and planted ſeparately in ſmall pots of any light dry earth, and placed in the green-houſe, or in a garden-frame under glaſſes; giving a moderate watering: but ſome ſorts of Aloes furniſh neither ſuckers, off-ſets, nor cuttings, and propagate only by young plants produced in the flower-ſtem, ſucceeding the flowers, ſuch as in the *Agave Vivipara*, or Childing American Aloe, and this Aloe never flowers but once in many years, the propagation can only be effected at that time, by the young plants which ſucceed the flowers; planting them in pots as the ſuckers.—See the method below of preparing ſucculent ſuckers, and cuttings for planting.

And as other ſucculents can be propagated only by cuttings, ſlips, joints, or heads, &c. of the ſtalks or branches, affording but few or no root-ſuckers, ſo in Summer take off cuttings of the ſtalks or branches, or ſlips, &c. or ſide-ſhoots of the ſtalks, from two or three to five or ſix inches long, according to their nature of growth; or, as ſome grow in jointed branches, or in joints growing one out of another, as in Indian Fig, &c. ſlip or cut off ſome in ſeparate joints, or two, three, or more joints long,

long, according to their nature; and as ſome ſorts grow low near the ground, in cluſtered heads, as in the Houſe-leek, &c. ſlip off ſome of the ſmaller ſide-heads, ſo plant the whole in pots of light dry ſoil; obſerving as below in planting theſe kinds.

But generally obſerve in the propagation of ſucculents by ſuckers, cuttings, &c. that previous to planting thoſe of a very ſucculent or humid nature, diſcharging much ſuccus or ſap at the bottom, that it is adviſable to lay the ſuckers, cuttings, ſlips, &c. upon a ſhelf in the green-houſe, or any dry place for a few days, or a week, or more, to heal and dry over the wounded part at bottom cauſed in cutting or ſlipping them off from the mother-plant, otherwiſe the moiſture iſſuing at that part, would rot theſe kind of plants after they are planted in the earth; for ſome ſorts being ſo very replete with moiſture that they will live a long time out of the earth, ſupported only by their own ſucculency; ſo that having thus previouſly prepared the very ſucculent kinds, as above, let the whole be planted in pots of dry ſoil, the ſmall ones may plant ſeveral in each pot; and if thoſe of the ſide-ſlips and cuttings in particular, not being furniſhed with roots, as in the root-ſuckers, are plunged in a bark-bed, it will greatly forward their rooting; or, in default of the convenience of a hot-bed, place them under a frame and lights, or hand-glaſſes, &c. to be defended from the rain till rooted, then have the full air in Summer, and they will root tolerably, but conſiderably ſooner and in better perfection aſſiſted by heat.

However, as to the ſuckers, root-off-ſets, or bottom ſide-ſlips and heads detached from or near the root, being often furniſhed with roots, or of a rooty nature at bottom, that they will often take root freely without aid of any artificial heat, as will alſo the cuttings of many ſorts, but being plunged in a little heat, under glaſſes at firſt planting, for-

wards them confiderably; being, however, careful if they are planted in Summer after the green-houfe plants are in the open air, to defend the cuttings, &c. either in a green-houfe, or under glaffes, from hard rains till they have taken good root.

The propagation of the herbaceous plants of the green-houfe collection is in many forts by feed, others by parting the roots, fide-flips, fuckers, off-fets, heads, &c. as in many of the fibrous-rooted kinds, and by root-off-fets, as in the bulbous and tuberous-rooted plants.

The feed of all the forts of green-houfe herbaceous plants may be fowed in the Spring, in pots and placed in a hot-bed, if any, or for want of this, placed next the green-houfe windows, near the glaffes, or under a garden-frame and lights, &c. but will be confiderably more fuccefsful and forwarder by the affiftance of a hot-bed, either in dung or under glaffes.

And as to the propagating by parting the roots, and by fide-flips of the root, head, &c. of the herbaceous fibrous-rooted tribe in the green-houfe collection, may be effected either in the Spring in all the fibrous-rooted kinds, before they fhoot up to flower, or in Autumn, after the flowering is paft, by the methods directed for the hardy herbaceous plant; planting the flips, &c. in pots of good earth, and watered.

Or in fome forts, cuttings of the young robuft flower-ftalks, before they flower, being divided into fhort lengths, and planted in pots, and plunged in a hot-bed, or covered clofe down with a hand-glafs, they, in feveral forts will root freely, and form good plants the fame year.

But in the bulbous and tuberous-rooted clafs in this collection, the propagation by root-off-fets muft only be performed when the ftalks and leaves of the plants decay after the flowering is paft, taking them up therefore for this purpofe, foon after they

or

or the leaves aſſume a decayed ſtate, before the roots begin to put out new fibres for growing again, and let all the ſide-off-ſets be detached from the main bulbs and tubers, and either plant them again directly in pots of light mould, or kept a month or two, or longer, but plant the main flowering roots in due time, to flower in their proper ſeaſon.

General Methods of Planting this Claſs of Plants in their proper Pots, &c.

After propagating the various green-houſe exotics occaſionally as required, both of the woody, herbaceous, and ſucculent tribe, that where the young new-raiſed plants are growing ſeveral together in a pot, either ſeedlings, or plants raiſed from ſuckers, cuttings, ſlips, &c. they, when well rooted, and have made ſhoots at top, ſhould be tranſplanted into ſeparate pots at the proper ſeaſon, either towards the Autumn of the ſame year, or in the following Spring, allowing the different ſorts, pots proportioned to their ſize, not too large at firſt, and ſhift them into larger occaſionally once in a year or two, as ſhall appear neceſſary, according to their advanced growth.

So that in planting the various ſorts of green-houſe exotics in ſeparate pots, ſhould have pots of different ſizes ſuited to that of the plants, and their nature of growth, which, when of ſmall ſize, ſhould have ſmall pots, and many of the tribe of African Aloes and other ſucculents, remaining always of a diminutive growth, never require large pots; however, many of the woody exotics of the ſhrub and tree kinds, and alſo many of the ſucculents grow to a large ſize, and require ſhifting occaſionally into larger pots as they increaſe in growth, and ſome when too large for pots, as ſome of the large Orange, Lemon, and American Aloe, &c. they require to be

ſhifted into tubs of a large ſize, which ſhould be hooped with iron.

As to the proper ſoil for this claſs of exotics, that for the tree and ſhrub tribe, any good rich kitchen garden earth is proper, or a compoſt of light, rich garden mould, ſandy loam, and rotten dung, having been prepared in a heap ſeveral months, and often turned over and well blended together, the ſame kind of ſoil will alſo ſuit moſt of the herbaceous plants; but as to the ſucculents, they naturally abounding in humidity, ſhould generally have a dry poor ſoil, for if too moiſt and rich, it is apt to occaſion them to rot in Winter, ſo may form a compoſt of any dry ſandy ſoil, or light earth, blended with any dry rubbiſhy ſubſtances.

The ſeaſon for general planting of green-houſe plants in their proper pots, is principally in Spring, in March, April, and May; or ſuch as can be removed with balls of earth to the roots, from one pot to another, may be occaſionally tranſplanted almoſt any time in Summer and Autumn; but Spring, at the times above-mentioned, or in Autumn, in the end of Auguſt or in September, are the beſt general ſeaſons for tranſplanting all kinds of the green-houſe exotics, but moſt of all in the Spring.

With reſpect to the methods of firſt planting, and occaſionally tranſplanting from one pot to another, &c. having the pots and mould, or compoſt ready, place either ſome pieces of tile or oyſter-ſhell over the holes at bottom of the pot, which holes being neceſſary to diſcharge the redundant moiſture when watering the plants, and it is neceſſary to place the tile or oyſter-ſhell, as above, to prevent the holes being either ſtopped up with the earth, or the earth from being waſhed out at thoſe parts with the occaſional waterings, then place ſome mould in each pot, about a quarter or half way; or ſometimes, for very ſmall plants, fill them to the rim, and having the

the plants, let them be taken up with as much earth as you can about the roots, and ſome with full balls when removing ſingly from one pot to another, and plant them into the pots, previouſly furniſhed as above, with more or leſs earth, add more mould about the roots, filling up within half an inch of the top of the pot, and give directly a proper watering: the very ſmall-rooted plants, may be planted in the pots previouſly filled to the top with earth, as above hinted, making a hole therein, inſert the plant, and cloſe the earth about the roots, and give water; as ſoon as planted, ſet the pots of plants a little out of the mid-day ſun, either in the green-houſe, if in the Spring-planting, but if in the early part of Summer, or in Autumn, in Auguſt or September, while the ſeaſon continues for the plants to remain in the open air, may place them under a ſhady hedge or wall, about a fortnight; obſerving, in either caſe, to ſupply them with water till they have taken good root.

As plants of young Oranges, Lemons, and ſome other green-houſe exotics, are imported annually from Italy, and ſome other parts of the Continent where they raiſe them abundantly in the open air, and ſend over large quantities here for ſale in the Italian warehouſes, every Spring, about March, April, and May, and as they commonly arrive packed in bundles without any earth about their roots, and frequently having large tall ſtems, with but ſcanty roots and top, it is proper in planting them, to allow them a hot-bed of tanner's bark to ſtrike them more effectual and expeditious, and ſet them a growing at top, otherwiſe are apt to root reluctantly, and make but weakly ſhoots.

Therefore, when ſuch plants are obtained, place the roots and ſtems in water ſome hours, and waſh the ſtem and head well, then plant them in pots of rich earth; or large plants of Oranges, Lemons, and Citrons, plant in tubs, giving water as ſoon as

planted; then, having prepared a hot-bed of tanner's bark in a glaſs-caſe, or green-houſe, or any department, having glaſs at front and top if poſſible, and plunge the pots therein, not too deep at firſt, till the heat is moderate, then plunged to their rims.

After this, give them moderate ſupplies of water once or twice a week, as you ſhall ſee neceſſary; and when they begin to ſhoot at top, admit free air every day, and they will make ſtrong ſhoots the ſame year; obſerving, if required to have them form full heads as ſoon as poſſible, may, in June, top the firſt ſhoots, and they will throw out laterals the ſame year, and aſſume a full growth.

Let them by degrees be hardened to the full air in July or Auguſt, when either remove them wholly abroad, or take off all the glaſſes to admit the full air, but if they have made good ſhoots, will be better if brought out entirely, to remain till Michaelmas, then houſed, and are afterwards to be managed as the other green-houſe exotics.—See the *Winter and Summer culture.*

General Obſervation.

After propagation and rearing any of the various green-houſe plants, obſerve in reſpect to training, that ſuch as naturally riſe with durable ſtems, both of the woody and ſucculent tribe, may either permit them to branch out low in a buſhy or branching order, or trim them up below by degrees, to a ſingle ſtem, of from ſix or eight inches, to one, two, three, or more feet, according to the nature of growth of the different ſorts, and let them branch out freely above, and form full heads.

All green-houſe plants being in pots, muſt be houſed every Winter, from October till May, and then brought forth in their pots into the open air

to

to remain in the pleasure ground, to adorn particular compartments till October again; they only requiring protection from frost, do not need the aid of artificial heat while resident in the green-house, only occasionally in very rigorous frosty weather, when moderate fire may be requisite at times, just to resist the power of the frost, and sometimes in very foggy moist weather, to expel the damps, but in all open and moderate weather, no sort of artificial heat must be admitted, and always in mild days, a large share of fresh air must be allowed them, by opening the windows more or less, and give frequent moderate waterings: and about the beginning, middle, and end of May, the weather being settled and moderately warm, the plants must be brought out, the hardiest first, such as Myrtles, &c. in the beginning, and the rest in the middle and latter end of that month, or beginning of June, for the Summer season; and their principal care then, is proper supplies of water; and let them always be housed in due time, about Michaelmas or soon after, before too much cold weather: or, in default of green-house room, some of the smaller hardiest sorts, as Myrtles, may be protected all Winter in a garden-frame of proper depth.—But see the *general culture in Winter and Summer* separately explained.

First, Their Removal into, and Winter Culture in the Green-house.

The green house exotics being originally inhabitants of warm countries, are not able to live here in the open air after the middle or end of October without danger of being killed or greatly injured by the cold, so must commonly be removed into the green-house in October; and in which conservatory, with proper management in giving fresh air and necessary waterings, they will remain in health and

beautiful verdure in full foliage all the dreary ſeaſon of Winter.

Begin therefore in the beginning or middle of October, to remove in all the more choice and tender kinds for their Winter protection, ſuch as all the tenderer ſucculent kinds that cannot endure moiſture, alſo the Oranges, &c. or if the ſeaſon proves very wet, it is adviſable to take in moſt of the ſucculent and other more delicate kinds of the green-houſe tribe, about the latter end of September or beginning of October, and towards the middle, remove in the Oranges, Lemons, and other choice and tenderer exotics of this claſs; and let the Myrtles and all the other hardier exotics be houſed ſoon after, having the whole houſed by the latter end of October, or ſooner if it ſhall ſeem neceſſary by the weather changing ſuddenly cold, or very wet, or there is an appearance of froſty nights; then, when all are brought in, let them be arranged in regular order, the talleſt kinds placed in the back range, and the others diſpoſe in a regular gardation down to the loweſt in the front, ſo as the whole may exhibit a ſort of amphitheatrical order, ariſing one above another, in ſuch regularity as every ſort may diſtinctly appear conſpicuous to view, and enjoy all an equal benefit of the ſun and free air; having alſo particular regard in placing them, to intermix the different ſorts ſo as to effect a ſtriking contraſt and diverſity in the different forms, ſizes, and tints of colours of the leaves, &c. and let the ſmall ſucculent plants be placed next windows in the drieſt ſituation, to enjoy the full ſun, for theſe ſorts ſhould remain as dry as poſſible all Winter.

Or, in deficiency of green-houſe room, ſeveral of the more hardy ſorts, as Myrtles, &c. may be ſtowed in a deep garden-frame, and defended on nights and bad weather with the proper glaſſes, or with mats and long litter, for they only want protection from hard froſt, ſnow, &c.

After

After the plants are thus houſed for the Winter, they muſt be well aſſiſted with due ſupplies of freſh air, and moderate waterings, and kept clear from decayed leaves, by picking or cutting ſuch off as ſoon as they appear; and be careful to protect the plants well in hard froſty weather, by defending the windows, &c. and by occaſional fire-heat, when the froſt is very rigorous.

In regard to the admiſſion of freſh air, it ſhould be admitted every calm mild day, by opening the windows, more or leſs, according to the temperature of the weather; for theſe plants only require protection from froſt and ſharp cutting air, and cold winds; therefore, obſerve, that when the plants are firſt brought in, they have a large admiſſion of free air, by opening all the windows and doors every day to almoſt the full extent, and if the weather is mild, may even leave them part open on nights, ſo as not to exclude the full air too ſuddenly; but as the cold increaſes, open the windows leſs in proportion, and ſhut them cloſe every evening about ſun-ſet, or ſooner, if very cold air; obſerving in mild days, begin to open for the admiſſion of air about eight, nine, or ten in the morning, according as the external air is more or leſs moderate, and as the warmth of the day increaſes admit air more freely, by opening the glaſſes wider, and in ſunny days ſhould indulge the plants with larger admiſſion of air, by opening the lights more generally, and to a greater extent than in cloudy weather; being careful to ſhut them by degrees towards the afternoon, or ſooner if the weather changes of a cutting, cold air, or ſharp wind; and in very raw, foggy, or exceſſive damp, or wet days in the Winter ſeaſon admit air but ſparingly, till the weather clears up a little; and do not admit air at all when cutting winds prevail, nor in froſty weather, except in ſuch ſunny days when the froſt is not ſo ſevere but that the ſun over-

overpowers the cold; being always careful to ſhut all cloſe in due time towards evening, from two, or three to four or five o'clock; but when the Spring advances, and the weather commences finer, warmer, and more ſettled, increaſe the admiſſion of air by degrees, beginning earlier in a morning, and continued longer in the evening, in proportion to the advanced period of the ſeaſon, even from ſoon after ſun-riſing to its ſetting in mild days.

Waterings will alſo be neceſſary to many of the plants during their reſidence in the green-houſe, particularly to all the woody tribe, more moderately to the herbaceous kinds, and very moderate to the ſucculents, for much moiſture in Winter would ruin thoſe ſorts; let therefore the plants in general be examined once or twice a week in open weather to ſee when water is wanted, and apply it accordingly as you ſhall ſee neceſſary when the earth in the pots or tubs becomes dry, generally, if poſſible, take the opportunity of ſunny days in a forenoon for this work; and always water with moderation, and ometimes in mild, open, ſunny weather, water all over the heads of the plants; being always careful in this ſeaſon of the year never to water too freely neither at bottom nor top, for if the earth is once rendered very wet, it will be long before it recovers a moderate degree of moiſtneſs, and will be apt to chill the roots and plants in general, as to occaſion them to drop their leaves, and in many ſorts totally kill them; ſo that we muſt be careful never to give too great quantities of water while the plants remain in the houſe, rather give it moderately once or twice a week, or ſometimes but once in ten or twelve days, or a fortnight, in the middle of Winter or cold weather, ſeldom giving water in ſevere froſty weather, unleſs on particular occaſions when the earth is very dry, for the plants muſt not want moiſture in a moderate degree, for if kept too dry many ſorts would alſo ſhed their

leaves

leaves the ſame as by too much humidity, but always let the ſucculents be watered with a very ſparing hand.

The water for watering all theſe plants, ſhould be ſoft, *i. e.* either pond or river water, or ſuch as has been expoſed to the open air, not uſe it immediately out of deep wells at this ſeaſon, without its being expoſed to the weather in a ciſtern, or reſervoir, &c. for ſome days to ſoften.

As decayed leaves will occur from time to time in many of the large-leaved plants, they ſhould be carefully removed, either by picking off the looſe leaves by hand; or in any ſtiff, fleſhy-leaved ſucculent plants, cut them off with a knife; for dead leaves have not only an unſightly appearance, but if conſiderable, would prove prejudicial to the health of the plants.

In froſty weather good attention will be required for the preſervation of the plants, very little air muſt be admitted or water given them, or ſcarcely at all, or at leaſt only occaſionally when the froſt is moderate and the weather ſunny; but when ſevere froſts, neither admit air nor give water, and keep the ſaſhes ſhut cloſe night and day, and defend the windows on nights with the ſhutters, if any, or if none, nail up mats, and if the froſt is ſo rigorous as to freeze water within the green-houſe, it is adviſable if the houſe is furniſhed with a flue for occaſional fire-heat, to make a gentle fire in the evening, and kept up moderately till bed-time, juſt to warm the internal air, ſufficient to reſiſt the ſeverity of the froſt, and even on days if it freezes exceſſive ſharp and the weather is cloudy ſo that there is no ſun-ſhine, and in which caſe, make alſo a ſlight fire in the morning, &c. or where there is no flue, a Buzaglo ſtove, placed in the green-houſe, would be very convenient in which to make gentle fires in ſevere weather, as above; however, in default of other conveniences, contrive to make one

one or more ſmall fires in ſome convenient utenſils, placed toward the windows of the conſervatory; obſerving, however, that as ſoon as the weather changes more moderate, to leave off making fires, which would be apt to force the plants into a weakly growth if continued longer than juſt neceſſary to repel the power of intenſely ſevere froſt.

Likewiſe, ſometimes in very foggy, damp, cloudy weather, a moderate fire occaſionally to expel the damp vapour will prove very beneficial.

In Spring, about March or April, ſhift ſuch of the green-houſe plants as are increaſed in growth and want larger pots, or want freſh earth; in doing this work, having the proper pots and a quantity of freſh earth ready, then placing ſome pieces of tile or oyſter-ſhell over the hole at bottom of the pots, and put a little freſh earth in each, and being then ready for the plants, turn them out of the preſent pot with the ball of earth about the roots entire; ſo as the plants may not receive any check by removal; obſerving to trim off any matted and mouldy roots, or fibres ſurrounding the ball at the ſides and bottom; and then, having the intended new pot, with ſome freſh earth in the bottom, place the plant therein with its whole ball entire, fill up with more earth near to the top of the pot, and finiſh with a proper watering; and replace them in the green-houſe till the ſeaſon for removing the plants into the open air for the Summer, and they being thus ſhifted with balls of earth they will ſcarcely feel their removal, nor ſhrink or diſcover any check in their growth.

But if plants be of a weak, unkindly, or ſickly growth, either ſhake them entirely out of the balls of earth, to be replanted wholly in new mould, or trim away a good part of the old earth around the ſide and at bottom of the ball, to admit of a larger portion of freſh earth; and thus, in either method, plant them in the proper pots, and fill up with freſh compoſt, and give water. Like-

Likewiſe, in the Spring ſeaſon, about February, March, or April, it will be beneficial to the growth of all ſuch green-houſe plants as are not ſhifted, or do not require ſhifting into larger pots, &c. to looſen the old earth in the top of the pots, and add a little freſh thereto, or it will be ſtill of more advantage if the earth is ſtirred both at top, a moderate depth, and a little down round the ſides next the pot, the looſe mould taken out, and add ſome freſh in its place, giving a moderate watering.

Alſo in Spring, about March or April, that if any of the Myrtles, Oranges, Lemons, Geraniums, or others of the ſhrubby or tree kinds have irregular or ſtraggling, naked, ill-formed heads of branches, they may be pruned down to order to the places where you would wiſh them to puſh forth new ſhoots to form more regular heads, for they will break out in both the old and young wood; obſerving, that to encourage them in this as much as poſſible, either let the earth in the pots be ſtirred a ſmall depth at top, and a little down round the ſides, removing out the looſe ſoil, and fill up the pot with new earth, and give water; or to any that require larger pots, may remove them with the ball of earth about the roots entire, and fill up around it in the new pot with freſh compoſt, and ſettle it down with a proper watering; and they will thus all ſhoot out freely in Summer; or any particular curious ſort thus treated, may afterwards be plunged into a bark-bed, it will promote their ſhooting more freely and expeditious.

When any of the ſame kinds of plants have dropped their leaves in Winter, and remain defoliated in Spring, it is proper in March, April, or May, both to prune their tops a little, and either new earth the pots at top, as before obſerved, or ſhift them with balls into other pots, and ſome freſh earth by the methods before directed; giving proper waterings: and by theſe operations they will

ſooner

ſooner recover, and put forth freſh ſhoots and leaves, and re-aſſume their proper verdure.

The propagation of green-houſe plants by ſeed, ſuckers, ſlips, cuttings, layers, off-ſets, grafting, &c. may be ſucceſsfully performed in the Spring, about February, March, April, and May, generally ſow the ſeed, or plant the ſuckers, ſlips, cuttings, &c. in pots, &c. and if convenient, plunge the pots in a hot-bed, either of tan or dung, under protection of ſome ſort of glaſs-work, either in a hot-houſe, glaſs-pit, garden-frame, &c. or in want of theſe, place them near the green-houſe windows. —See the article *propagation*.

When the Spring advances, the weather fine, and the plants aſſume a free-growing ſtate, let the admiſſion of freſh air be more abundant, from ſoon after ſun-riſing to its ſetting, in all open weather; alſo give water more freely, and when the ſeaſon approaches towards the time for removing the plants into the open air, give a larger admiſſion of freſh air in proportion, and when near the time for bringing them out, taking every opportunity of warm days to open the glaſſes to their full extent, and in the laſt week of their remaining in the houſe, ſometimes leave the whole open day and night, to inure the plants by degrees to the open air when brought out in Summer.

Removing them into the open Air; and Summer Culture.

In the beginning or middle of May, if the ſeaſon is ſettled in moderately warm, begin to bring forth the Myrtles and other hardier green-houſe exotics into the open air, and towards the end of the month, remove out the greater part; and in the beginning of June, take out the ſucculents and all other

other plants then remaining in the green-houſe; obſerving, that according as all the plants are brought out, let their heads be cleared from all dead leaves, and then watered all over to clear them from duſt and any foulneſs they may have contracted during their reſidence in the houſe, or if any of the large-leaved kinds are very foul, waſh them leaf and leaf with a ſponge and water.

And if any require ſhifting into larger pots, or others not ſhifted, want the earth ſtirred at top, or ſome freſh earth added, and was omitted a month or two ago, as adviſed while remaining in the green-houſe, it may now ſtill be performed, in the manner before directed.

Alſo, if at this time, when the plants are brought forth, if any have irregular, ſtraggling, or unſightly heads, or of a weakly ill growth, or have ſhed their leaves, as ſometimes is the caſe, may now have the irregular and weakly branches and ſhoots pruned to order; or thoſe without leaves cut ſhorter, as adviſed in the Spring culture; or any Myrtles, &c. having naked ſtraggling heads, may now be headed down, then turned out of the pots, and plunged into the full ground all Summer, in which they will ſtrike their roots, and ſhoot out ſtrongly at top, forming handſome heads by September, when re-pot them with balls, for removing into the green-houſe in Winter.

Likewiſe, young Myrtles, of a year or two old, if now turned out of the pots into the full ground, will ſhoot ſtrong and form handſome buſhy heads by Autumn, when re-pot them, as above; this is of importance to gardeners who would raiſe large quantities quickly to a handſome ſize for ſale, as practiſed about London.

When the general green-houſe plants are firſt brought out into the open air for the Summer, place the tender kinds in a ſheltered ſunny expo-

ſure, and in a week or fortnight after may be removed to where they are intended to ſtand all Summer, either in collection together, or diſpoſed in different parts of the pleaſure ground, to adorn any particular compartments, or to embelliſh forecourts, &c.

Having now placed them where they are to remain all Summer, the principal care is to ſupply them with proper waterings as they ſhall require; ſome, in dry weather, will require it every two or three days; and ſometimes in the great heat and drought of Summer, in June, July, and Auguſt, waterings will be requiſite to ſome ſorts every day, or even twice a-day to very ſmall pots, as you will obſerve in general by the earth in the pots and tubs drying; obſerving, at this ſeaſon, to give water in general both to the woody, herbaceous, and ſucculent kinds, but always more moderate to the latter; remarking, that if light ſhowers of rain happen, not to depend entirely on this as a ſufficient watering, but aſſiſt alſo occaſionally in giving water where it appears neceſſary, eſpecially in the large-headed plants which ſhoot off the rain, if but moderate, before it reaches the pots or tubs; giving alſo occaſional waterings in dry weather over the branches and heads of the plants.

In dry ſcorching weather, it is eligible, in gardens where there are mowings of ſhort graſs, to lay ſome an inch or two thick on the tops of the tubs, or pots, containing the plants, to prevent the earth and the upper fibres of the roots from being parched by the heat, and to preſerve the moiſture of the earth longer, ſo as not to require water ſo frequent and abundant.

However, be ſure not to let them want water at this ſeaſon in due abundance when the weather is hot, and as the hot ſeaſon decreaſes give more moderate waterings in proportion.

In

In their Summer's growth, if any of the plants ſhoot very irregularly, they may be pruned to order, as it ſhall ſeem expedient to effect regularity; and keep all decayed leaves cleared away as often as they appear.

About June or July, may propagate Myrtles and ſeveral other ſhrubby exotics, by ſlips and cuttings of the ſhoots of the year, which either cut or ſlip off from the ſides of the branches, of from three or four to five or ſix inches long, ſtrip off the lower leaves and plant them in pots, ſeveral in each, inſerting them within an inch or two of their top, according to their length; and give water, and place them in a garden-frame, under glaſſes, or plunged in a bark-bed, to forward the emiſſion of roots; giving ſhade from the hot ſun in the middle of the day; and proper ſupplies of water.

But the ſmall cuttings of Myrtles, &c. of but three or four inches long, that if a large ſupply is required, as by thoſe who raiſe them for ſale, may plant many together in largiſh pots or wide earthen pans, putting them in but an inch or two aſunder, and inſerted in the earth within an inch or leſs of their tops; giving water in general as ſoon as planted; then either place them in a bark bed, to forward the rooting, or in want of this, under a frame and lights, or covered down with hand-glaſſes, or oiled-paper-frames, &c. admitting only a moderate portion of air, or ſcarcely any at all till they take root, but give frequent waterings; and if the pots are plunged into any bark-bed in the hot-houſe, or other hot-bed, under any glaſſes defended from the weather, the cuttings will here very freely emit roots in a ſhort time, and ſhoot freely at top, ſo as to be fit either the following Autumn or Spring to prick out ſeparately into ſmall pots.——See *propagation*.

In the middle or end of July, or beginning of Auguſt, may propagate ſuch plants by budding as

are usually raised by that method, such as Oranges, Lemons, Citrons, &c. which operation must be performed upon stocks of these kinds raised from seed to a proper size, with stems two or three feet high or more; performing the budding near the top, and if convenient, plunge them in some moderate bark-bed, in a glass-case, &c. a fortnight or three weeks, to have the benefit of a little warmth at bottom, which will greatly forward the junction of the buds, giving a large admission of free air, and a moderate shade from the mid-day sun, afterwards remove them into the full air till housed for the Winter; then, if in Spring following, in March or April, they are plunged again in a bark-bed, it will greatly forward and assist the free shooting of the buds, which by June or July will be advanced considerably, or they may be topped in June, to obtain lateral shoots to form a fuller head; giving a large share of free air; and in June harden them by degrees to the full air, so as in the end of that month may bring them out entirely for the Summer.

May also, any time in Summer and Autumn, propagate the succulent exotics by root-suckers, side-off-sets, and heads; or in some sorts, by cuttings of the stalks and branches, according to the nature of growth of the different sorts; generally lay the suckers, heads, or cuttings, &c. to heal and dry over the bottom part that adhered to the mother-plant, which otherwise, as they abound with moisture, would be apt to rot in the earth when planted; let them have pots of dry light soil, and plant them therein; give a very little water just to settle the earth, and place them under some frame and glasses to defend them from rain till rooted; or to forward the rooting more effectually, plunge them in a hot-bed of bark or dung, also under glasses, &c.—See the methods of *propagation* for *green-house plants.*

The

The fibrous-rooted herbaceous kinds may be propagated in Autumn, when the flowering or principal Summer's growth is paſt, by root-off-ſets, ſuckers, or parting the roots; or ſome ſorts, by cuttings of their flower-ſtalks before they arrive to flowering; planting them in pots, and plunge them in a hot-bed.—See the *propagation*.

And the bulbous and tuberous-rooted tribe may be propagated by root-off-ſets, by taking them up as ſoon as the ſtalks and leaves decay, when detaching the off-ſets from the main bulbs, may either plant the whole again directly, or in ſome convenient opportunity after, in due time to flower at the uſual ſeaſon for the reſpective ſorts.

If any of the green-houſe plants have advanced conſiderably in growth in Summer, ſo as in Auguſt or September they require larger pots, let them be ſhifted in due time, removing them with the whole ball of earth about the roots, and fill up with freſh earth, in the manner as adviſed in the Spring-ſhifting, when the plants remained in the green-houſe; give water, and place them in the ſhade for a fortnight or more, till they ſtrike root into the new earth.

The other plants, in general, may have the earth now and then ſtirred on the top of the pots and tubs; and towards the time of taking them in for the Winter, take out a little of the old earth at top, add ſome freſh in its ſtead, and this will promote a healthful ſtate all that ſeaſon while in the houſe.

Thus far is principally the general culture of green-houſe plants during the Summer ſeaſon, while they are in the open air, in which having remained till October, then begin to remove them again to their Winter's reſidence in the green-houſe, as directed under the head *Winter culture*.

THE

HOT-HOUSE,

STOVE, OR PINERY, &c.

THEIR

Description, General Utility, Dimensions and Construction;

AND

PROPER PLANTS.

A Hot-house, stove, or pinery, may be considered as similar, or occasionally as one and the same, or separate departments; being repositories warmed by artificial heat of tanner's bark hot-beds and actual fire, for the reception, preservation, and culture of the tendereſt claſs of exotics, from the hotteſt parts of the world, requiring the conſtant protection here the year round of theſe conſervatories, which alſo ſerve for occaſionally forwarding various hardy plants to early perfection; ſometimes the ſame department ſerves as a general repoſitory, under the denomination of a hot-houſe or ſtove, both for Pine-apples, and all other tender exotics called hot-houſe plants; and ſometimes is deſigned principally as a pinery or Pine-apple ſtove, for the culture of Pines chiefly; and ſome have diſtinct ſtoves for other tender exotics, though nearly of the ſame temperature of heat; for departments of the ſame plan, dimenſions, and conſtruction will ſuit almoſt the whole

whole tribe of tender exotics exhibited under the arrangement of hot-houſe plants aforeſaid.

So that a hot-houſe, ſtove, or pinery, is an oblong building, conſiſting wholly of upright glaſs-ſaſhes, fronting the ſouth ſun, and at both ends, and with ſloping or inclined glaſſes at top, extending from the top of the front to a back wall north-wards, twenty, fifty, or an hundred feet long, or more, by twelve or fifteen wide; ſix or eight feet high in front, and ten or twelve behind, or more, for loſty plants; having internal flues, funnels, or vents, for fire-heat in Winter, ranging along the inſide of the walls, from a furnace or fire-place without, in ſeveral returns over one another in the back wall, the laſt terminating in a chimney at one end; and withinſide is a capacious pit almoſt the length and width of the bottom ſpace, by three feet depth, in which to make a ſubſtantial bark-bed to furniſh a conſtant internal heat the year round, night and day, aſſiſted alſo by fire-heat in Winter; for the plants reſidents of this department being from the hotteſt regions, in different parts of the world, and conſequently of a delicate temperature in this country, not only unable to live here in the open air, and requiring the continual protection under glaſs buildings as above, but alſo require the internal air thereof to be kept to a conſtant temperature of artificial heat, equal to that of their native country, which is effected by the joint aſſiſtance of actual fire, and tanner's bark hot-beds; the latter being ſupported all the year, as above hinted, and the fire-heat only in Winter to aſſiſt the more moderate heat of the bark-bed, which is not alone ſufficient to maintain a requiſite temperature in the Winter ſeaſon; therefore all this claſs of plants muſt always be kept in pots, and retained conſtantly in this conſervatory; ſuch as the Pine-apple plants muſt always be plunged in the bark-bed, and others placed in

different

different parts of the houſe, where convenient, but not too near the flues, when there is fire-heat.

So that by the aſſiſtance of a hot-houſe, we may cultivate a collection of the moſt tender and curious exotics, from the moſt diſtant hot parts of the world, in great perfection, and propagate their different ſpecies and varieties.

And by a hot-houſe we can raiſe that moſt delicious exotic fruit, the Pine-apple in the higheſt degree of maturity.

Beſides, by the aſſiſtance of the artificial heat of ſtoves, pineries, or hot-houſes, and forcing-houſes, &c. we are enabled to forward the produce of many of our common hardy trees, ſhrubs, flowers, and plants, to a very early perfection, ſo as to obtain ſome of the choiceſt fruits and flowers ſome months before their natural ſeaſon, ſuch as Early Cherries, Strawberries, Peaches, Nectarines, Apricots, Grapes, Figs, &c. and of flowers, have Early Hyacinths, Narciſſus, Jonquils, Tulips, Pinks, Roſes, &c. alſo Early Cucumbers, Early Kidney-beans, Peas, &c.

Likewiſe, by the convenience of hot-houſe and ſtove departments, having bark-beds, we can raiſe and ſtrike many curious plants, both of the tender and hardy tribe, by ſeeds, cuttings, ſlips, &c. with greater expedition and effect, by plunging the pots in the bark-bed; and there are ſome ſorts, which, without the aſſiſtance of a bark-bed heat in a ſtove or hot-houſe, can hardly be propagated with any tolerable ſucceſs, ſo that ſeeds and cuttings of any ſorts of curious plants may be greatly forwarded in their rooting, by being ſowed, and planted in pots, and plunged in the bark-bed; or any curious exotics, newly planted in pots, being plunged into a bark-bed, it will run them off quickly in rooting afreſh.

So that any kind of hot-houſe, ſtove, or forcing-houſe, conſtructed for fire and bark-heat, either of a moderate or large dimenſions, are remarkably convenient

venient in gardening, both for the culture of those most curious plants and fruit, the Pine-apple, aforesaid, and the numerous other tender exotics, called hot-house plants, and forwarding any of the more curious hardier kinds occasionally, both of the green-house, and natural ground plants, fruits, flowers, &c. in the order before suggested.

As to the general plan, dimensions, and constructions of a hot-house or stove, the following observations exhibit the principal particulars, as now almost every builder knows how to execute the plan accordingly.

With respect to the plan and dimensions, a hot-house should be of an oblong form, ranging east and west, longer than broad, and fronting the south sun; the length may be from fifteen or twenty, to fifty or an hundred feet, as before observed, and in width, twelve or fifteen feet; six or eight feet high in the front, by ten or twelve in the back wall, which is a sufficient height for a common Pine-apple stove, and for the culture of many other curious exotics of similar quality, not of very tall growth; but where intended a full collection, and among them some of tall stature, or high climbers, may have the stove from six or eight feet in the front, as aforesaid, to fifteen or twenty high behind, and wider in proportion; but the most common general hot-house is of the first mentioned dimensions.

The construction of such departments, consist of brick walls all round, only two feet high in the front and ends, on which to erect the glass-work frames, and from ten to fifteen feet behind, or more, according to the rules above explained; but for a common hot-house, Pine-apple stove, &c. ten feet in the back wall may be sufficient, having at the bottom of the back wall, withoutside thereof, or at one end, or at both, if a very long house, a furnace or fire-place, with a funnel or flue proceeding

ceeding from thence, and conducted along the inside of the front and end walls, and thence along the back wall, in two or three returns over one another to the whole length the last flue terminating in a chimney at one or both ends: a house of forty or fifty feet long may be worked with one fire, but if much longer, two fire-places will be necessary, with each its proper range of flues in separate divisions, having the brick-work thereof closely joined and secured, that no smoak of the fires may enter into the house; a door for entrance into the stove being either at one end, or in the back wall, as convenient, or in both places, in large houses; and in the internal space between the front and back wall, must be the pit, or cavity, in which to make the bark-bed, it may be from six to eight feet wide, the length nearly that of the house, all but a space for an alley at each end, which also should be continued all round, and the depth of the pit must be a yard, or three feet and a half, though not much more than a foot in the ground, the rest raised two feet or more above, by means of a surrounding brick wall, continued quite from the bottom of the pit to the proper height, of a yard or three feet and a half, as above observed.

The framing for the glass-work must be erected upright, upon the top of the front and end walls, four or five feet high, fitted to receive sashes of three feet and a half wide, made to slide sideways beside one another, with inclined sashes the same width, ranging from the top of those in the front to that of the back wall, in two tiers, made also to shove up and down one over the other; the panes of glass-work in both, should be laid in putty, with the ends lapped over about half an inch, to shoot off the wet like tiles on a house.

But to have a Pine hot-house or stove perfectly complete, there should be an appendage of a small erection, called a succession-house, or succession-pit, either

either attached to one or both ends of the main houſe, or detached therefrom, and conſtructed nearly on the ſame plan, but neither ſo wide, long, or lofty, deſigned to ſerve by way of a nurſery to the principal ſtove for raiſing and rearing a ſucceſſional annual ſupply of young Pine-apples, to a proper ſize for fruiting, without incommoding the main houſe aforeſaid, but ſo as always to have a ſufficiency of young plants, advancing to a proper ſize, of one and two Summers growth, for ſupplying the fruiting Pine ſtove each Autumn, with good two-years Pine plants, when the old ones of each year have done fruiting, for the old Pine plants never fruit again, only produce ſuckers the ſame ſeaſon of their fruiting to propagate and perpetuate the ſpecies.

Or, for ſtriking and nurſing the young ſuckers and crowns of the Pine plants the firſt ſeaſon, may have alſo one or more detached bark-pits of ſix or eight feet width, formed with a brick wall all round; five or ſix feet depth behind, by four in the front, and glaſſes only at top, and a flue or two ranging along the upper part of the back wall.

And in ſome gardens, where there is a grand collection of hot-houſe or ſtove plants, there are ſeperate ſtoves, ſome principally for Pines, and a few other plants occaſionally; others chiefly to contain a general collection of all ſorts; and ſome have different ſtoves for different claſſes of the hot-houſe plants, ſuch as a common bark-bed and fire-heat ſtoves, for the general woody and herbaceous tribe; and a dry ſtove, worked only by fire-heat for the ſucculent plants, that they may not be infected by the moiſt air of the bark-bed, &c. however, in default of theſe ſeparate conveniences, may have a common Pine ſtove, and admit therein a ſmall collection of all ſorts of moderate growing plants, as far as there is room, as they will all ſucceed tolerably by the ſame temperature of heat.

And

And as to forcing-houſes, purpoſely for early fruit, flowers, &c.—See them deſcribed in the firſt volume, under the head *forcing early fruits.*

Let either, or all of theſe hot-houſe or ſtove departments, as ſoon as erected, have all the wood-work of the framing and glaſs-work painted white in oil-colour, both to preſerve it from the weather, give it a lightſome appearance, and to reflect the rays of light to the plants, and have all the inſide of the brick work plaiſtered and alſo white-waſhed over.

Having the buildings finiſhed in Summer, or early in Autumn, time enough to dry properly, may admit plants therein the ſame Autumn, in September or October.

Obſerving, previous to the admiſſion of the plants, ſhould fill the bark-pit with new tanner's bark, and if the walls are damp, make gentle fires in the furnace of the flues to dry the walls; and then, when the bark-bed is become of a moderate heat, bring in the plants intended, all of which may be obtained at the public nurſery gardens, ready raiſed and potted, ſuch as Pine-apples, and all other hot-houſe exotics; obſerving, that all the Pine plants muſt be plunged into the bark-bed; alſo the Coffee Tree occaſionally, and ſome other of the more curious and tenderer kinds, both of the herbaceous and woody kinds: but where the bark-bed is moſtly occupied with Pine-apples, as is often the caſe, moſt of the other exotics will ſucceed in any other part of the houſe, upon ſhelves, &c. and as to the very ſucculent plants, they ſhould moſtly have a dry ſituation out of the bark-bed; and having thus a moderate collection of different ſorts, they may eaſily be multiplied by the ſeveral common methods; which ſee after the general arrangement of the proper plants.

The bark-bed heat is required all the year, generally filling the pit with entire new tan every Autumn,

about October, and which by forking it over to the bottom once in three or four months, and by adding a quantity of new tan in the Spring, and working it up with the old, it will maintain a growing heat for a twelve-month.

The fire-heat will only be required in Winter, as already obſerved, making moderate fires every evening about ſun-ſet, and kept up till bed-time, from the end of October, or November, till May.

But for the particular management of the hot-houſe, &c. ſee the general management thereof after the following deſcription, and arrangement of the different plants.

Hot-houſe Plants; their general Deſcription, Arrangement of the different Sorts, and general Culture.

Hot-house or ſtove plants, being exotics, as we before noticed, that are obtained from the hotteſt regions of diſtant countries, cannot be cultivated in theſe parts in the open air, but require to be under continual protection of the afore-mentioned conſervatory or hot-houſe department, aſſiſted always the year round by artificial heat of tanner's bark hot-beds, and actual fire in Winter; and the plants conſiſt both of tree, ſhrub, and underſhrubby kinds, many ſucculent and herbaceous exotics of various ſtructures and habits of growth; and thoſe uſually retained here, are moſtly all of a perennial nature, of many years duration, and the greater part continue in foliage and verdure the year round, exhibiting together a moſt curious variety, and many of them of great ſingularity; all natural reſidents of various diſtant climates of South America, Aſia, and

and Africa; and they being the tendereſt of all our garden plants, inſomuch as they ſcarcely will ſucceed here in the open air in the middle of Summer, except ſome ſorts, about a month or ſix weeks in the hotteſt ſeaſon; ſo muſt always be retained in pots, and moſtly kept always in the hot-houſe departments, before deſcribed.

In moſt hot-houſes, the Pine-apple plants are the principal inhabitants, for the ſake of their admirable fruit; and are therefore allowed to occupy the greater part of the houſe, requiring to be kept always plunged in the bark-pit the year round, aſſiſted alſo by fire-heat in Winter, as before hinted; but as the ſame temperature of heat will alſo ſuit all the other hot-houſe tribe of plants, may alſo, as far as there is room, have a collection of the different ſorts, of moderate growth, in the ſame ſtove, &c. in default of any other, diſpoſed in different parts thereof, in the beſt manner the ſpace of room admits, ſome in the bark-bed, others on the ſhelves, &c. not to incommode the Pines, the principal reſidents; but, as before obſerved, where there are the conveniences of ſeparate ſtove departments, allot a ſeparate one for the different claſſes of plants, as one chiefly for the culture of Pines, another for the woody tribe and herbaceous perennials, and one for the ſucculents; but ſtill, for want of other conveniences, one ſtove may ſerve for the whole.

The woody tribe of this collection, conſiſting of trees, ſhrubs, and underſhrubby kinds, are of various different ſtructures, habit, and port, exhibiting a curious variety as natives of many different climates, various in growth, ſize, ſtature, foliage, flowers, fruit, and fragrance, wholly perennial, or of long duration, in root, ſtem, and branches, remaining moſtly in verdure the year round.

The herbaceous tribe, conſiſting both of fibrous, fleſhy, tuberous, and bulbous-rooted kinds, having durable roots, but renew their flower-ſtalks and

leaves annually, many of them producing very elegant flowers, others admired for their beauty or ſingularity of their foliage and fruit, which latter in the Pine-apple, excels all others.

And as to the ſucculent plants of the hot-houſe tribe, they are of very conſiderable variety, of many ſingular ſtructures and habit of growth, from the moſt diminutive ſize of one or two inches, to large, upright, and climbing kinds, of ſeveral feet height and extenſion; and are by far the moſt ſingular in the many ſtrange forms of growths, exhibiting in themſelves a very wonderful variety; are all of a ſucculent or humid nature, conſiſting e ither wholly only of thick fleſhy leaves, or fleſhy ſtems, branches, and leaves together, or ſome without either viſible ſtem, branch, or leaf, but formed wholly of a large, globular, fleſhy maſs, ſitting cloſe to the earth, as in Melon Thiſtle; others erect themſelves like a column, many feet high, without branches or foliage, as in Torch Thiſtle; ſome are long and trailing, and ſome climb upon ſupport, planting their roots into the walls, as in Creeping Cereus, &c. other ſorts riſe with uprightiſh fleſhy ſtems and branches, in many curious forms, and ſome with jointed fleſhy branches growing out of one another in a ſingular manner, the whole being very replete with moiſture, and are moſtly all of the perennial kind, of many years duration both in root, ſtem, and branches; and in ſome ſorts, as Aloes, &c. the leaves are alſo of ſeveral years duration: there are alſo of the ſucculent tribe, ſome curious annuals that may be introduced in the hot-houſe collection, ſuch as the Diamond ficoides, a ſpecies of the *Meſembryanthemum.*

The following is the general arrangement of the different hot-houſe plants, and in which they are diſtinguiſhed in each genus, whether of the woody, ſucculent, or herbaceous tribe, how propagated, &c. and afterwards is explained their propagation and general culture. They

They are arranged according to the botanic ſyſtem, all the different ſpecies in their proper families, agreeable to the character of their flowers, as in all the foregoing arrangements of plants, viz.

ACHRAS—Mammee, or Sapota Tree—Mammee Tree, or American Marmalade—Sapota Tree, or Leſſer Mammee. By ſeed, layers, cuttings, &c.

ACHYRANTHES—*Achyranthes*—Rough Achyranthes—Lappaceous-fruited——Muricated, or Prickly-cupped——Proſtrate-ſtalked. (Shrubby and herbaceous.) By ſeed, cuttings, layers, off-ſets, &c.

ADANSONIA *Bahobab—Bahobab*, or Æthiopian Sour Gourd Tree. By layers, cuttings, ſeed, &c.

ADENANTHERA———Baſtard Flower Fence. (Shrubby.) By ſeed, layers, &c.

ADIANTHUM—Maiden-hair—*Capillus veneris*, or True Maiden-hair. (Frondoſe-herbaceous.) By off-ſets, &c.

ÆSCHYNOMENE—Baſtard Senſitive Plant——Great-flowered. (Shrubby.) By ſeed, &c.

AGAVE—Great American Aloe—Viviparous, or Childing—Stinking of Curaſſao. (Great ſucculents.) By ſuckers, and young plants ſucceeding the flowers on the branches.

ALETRIS—*Aletris*—Guinea Aloe, &c.—*Hyacinthoides*, or Hyacinth-flowered—Ceylon Variegated-leaved—Guinea Aletris, with jointed roots—Cape Nodding-flowered Aletris—Fragrant, Stalky

Aletris. (Succulent.) By off-sets, suckers, heads, seeds, &c.

ALOE—African Aloe——Perfoliated Tree-stalked; consisting of many varieties, as the Sword-leaved —Great Amplexicaul-leaved, or leaves embracing the stalk—Broad Spinous-leaved—Short Glaucous-leaved—Glaucous Spinous-backed-leaved—Short Glaucous Thornless-leaved—Dwarf Glaucous Aloe, with red flowers—Spotted-leaved—Great Spotted Spinous Aloe—Minor Spotted Spinous Aloe—Soap Aloe, being spotted like soft soap——Succotrine Narrow-leaved Spinous Aloe—Mitre-shaped Broad-leaved——Ferox, or Great Prickly———Humble, or Dwarf Awl-shaped-leaved, with soft spines———Clustered-spined, Dentated, Plane, Spotted-leaved, or True Aloe, the above are supposed to be all varieties of the Perforated Stalky Aloe, the greater part rising with stalks, more or less, supporting the leaves at top: the other species are, Variegated, or Partridge-breast Aloe——Distichous Spotted-leaved—Tongue-leaved Distichous Aloe—Triangular Spotted-leaved Distichous Aloe——Keel-shaped Warted Distichous Aloe—Plane-leaved Distichous Aloe—Tree-stalked Plaited, or Fan-leaved Distichous Aloe—Spiral Upright Aloe; consisting of the Round Spiral Aloe, and the Quinquefarious, or Five-cornered, with leaves imbricated five ways—Retuse-leaved, or Cushion Aloe—Viscous Erect Triangular Aloe—Dwarf Pearl Aloe—Minor Pearl Aloe—Minute Pearl Aloe—Cobweb Aloe——Triangular-pointed-leaved Soft-spined—Hedghog, or Most Prickly Dwarf Aloe. (Succulents, both with tall and short durable stems, and without stalks, having the leaves close to the root.) By suckers, off-sets, heads, seed, &c.

ALSTRO-

ALSTROEMERIA—*Alſtroemeria*—Erect-ſtalked—*Ligta*, or Aſcending-ſtalked. (Herbaceous.) By off-ſets, &c.

AMARYLLIS—Lily Daffodil—Cape Lily—Jacobæa Lily—Ceylon Lily—Oriental, or Brunſwigian Lily—Ciliated Scarlet African Lily—Belladonna Mexican Lily—Long-leaved African Lily. (Herbaceous, with bulbous roots.) By root-offſets, &c.

AMOMUM—Ginger—*Zinziber*, or True Officinal Ginger—*Zerumbet*, or Baſtard Ginger. (Herbaceous.) By ſlips, off-ſets, ſuckers, &c.

AMYRIS *balſamifera*——Balſamiferous, with bijugated leaves—*Elmifera*, or Ternate-acute-leaved. (Shrubby.) By ſeed, cuttings, layers, &c.

ANACARDIUM *occidentale*, or Caſhew Nut. (Shrubby.) By ſeed, &c.

ANNONA—Cuſtard Apple—Prickly-fruited——Squamous Scaly Rough *Annona*—Netted-fruited—Aſiatic. (Woody.) By ſeed, cuttings, layers, &c.

ANTHOLIZA, or Æthiopian Corn-Flag—Grinning-flowered—*Cunonia*, or Perſian Erect-flowered—*Meriana*, or Funnel-ſhaped Red-flowered of the Cape—Æthiopian Scarlet-flowered. (Herbaceous.) By off-ſets, ſeed, &c.

APOCYNUM—Dog's-bane, or *Apocynum*—Shrubby of Ceylon—Netted-veined-leaved of India. (Shrubby and herbaceous.) By cuttings, layers, off-ſets, ſeed, &c.

ARALIA *arborea*, or Tree *Aralia*. By ſeed, ſlips, off-ſets, ſuckers, &c.

ARCTOPUS

ARCTOPUS *echinatus*—Prickly *Arctopus*. (Herbaceous.) By ſeed, off-ſets, &c.

ARISTOLOCHIA *Indica*—Indian Birthwort——Mexican Acute-flowered. (Herbaceous and underſhrubby.) By off-ſets, ſlips, ſeed, &c.

ARTEMISIA—Mugwort—Æthiopian Shrubby—Cape Artemiſia. (Shrubby.). By ſlips, cuttings, &c.

ARUM—Wake-Robin, or *Arum*—Divaricated-leaved Indian—Three-lobed-leaved of Ceylon—Long-rooted of Ceylon—Eſculent, or Eatable—*Colocaſia*——Arrow-headed Triangular-leaved of Braſil—Tree Arum, with erect ſtalks—*Arum ſequinum*, or Indian Dumb Cane—Ivy Rooting-ſtalked Arum—Lingulated Rooting-ſtalked. (Herbaceous and underſhrubby.) By off-ſets, ſlips, cuttings, &c.

ARUNDO——Reed——*Bambos*, or Indian Bamboo Cane——*Donax Verſicolor*, or Variegated Indian Reed. See alſo green-houſe. (Tall woody, and underſhrubby-herbaceous.) By cuttings, ſlips, off-ſets, roots, &c.

ASCLEPIAS—Swallow-wort—Giant Broad-leaved Indian—Curaſſaon Orange-coloured, or Indian Orange *Apocynum*—Lactiferous, or Milky of Ceylon. (Herbaceous and underſhrubby-herbaceous.) By off-ſets, ſlips, cuttings, ſeed, &c.

ASPARAGUS *Draco*—*Draco*, or Dragon Tree. By ſeed, off ſets, &c.

BANISTERIA—*Baniſteria*—Bay-leaved Jamaican—Bengal Citron-leaved—Angular-leaved American

rican—Purple-flowered. (Shrubby.) By cuttings, ſeed, layers, &c.

BARLERIA—*Barleria*—*Prionitis*, or Indian Box-thorn—Box-leaved. (Herbaceous and ſhrubby.) By off-ſets, ſlips, cuttings, ſeed, &c.

BASELLA—Malabar Nightſhade—Red Indian—White Chineſe. (Herbaceous, &c.) By ſeed, off-ſets, and cuttings.

BAUHINIA—Mountain Ebony—Ungulated Parallel-lobed-leaved—Acuminated-lobed—Divaricated-lobed—Prickly-ſtalked—Variegated. (Shrubby.) By ſeed, cuttings, ſlips, &c.

BIGNONIA—Trumpet-flower——Peruvian Aſh-leaved—*Lencoxylon*, or American Digitated-leaved—Five-leaved—Roſe-flowered of Jamaica—Indian Bipinnated-leaved——Blue-flowered of Carolina. (Shrubby.) By cuttings, layers, and ſeed.

BIXA *Orellana*—*Orellana*, or American Arnatto. (Shrubby.) By ſeed, cuttings, layers, &c.

BOCCONIA *fruteſcens*, or Shrubby Salendine. By cuttings, layers, ſeed, &c.

BOERHAVIA—American Hogweed—Climbing-ſtalked—Erect-ſtalked. (Herbaceous.) By off-ſets, ſlips, ſeed, &c.

BOMBAX—Indian Silk Cotton Tree—Pentandrious-flowered, with ſeven and nine-lobed leaves—*Ceiba*, or Polyandrious-flowered, with five-lobed leaves—Heptaphyllous, with ſeven lobed leaves, and polyandrious flowers. By ſeed, layers, cuttings, &c.

BONTIA

BONTIA—Barbadoes Wild Olive. (Shrubby.) By layers, cuttings, ſeed, &c.

BORASSUS *flabellifer*—Flabelliform, or Fan-leaved Palm. (Frondoſe-ſtalked.) By ſeed, off-ſets, &c.

BROMELIA *Ananas*—*Anana*, or Pine-apple; compriſing many varieties, ſuch as the Oval-fruited, Sugar-loaf-fruited, Green-fruited, Red-fruited, Monſerrat Pine, Black Antigua, Olive-coloured, Smooth-leaved, Green, Shining Smooth-leaved, Silver-ſtriped-leaved, Yellow-ſtriped-leaved—*Bromelia Karatas*—*Karatas*, or American Wild Pine-apple—*Bromelia Penguin*, or Jamaica Wild Pine. (Herbaceous and ſomewhat ſucculent.) By ſuckers at bottom of the plant, and at the baſe and crown of the fruit.

BRUNIA—*Brunia*—Woolly-branched—Ciliated-leaved—Southernwood-leaved. (Shrubby.) By cuttings, ſeed, layers, &c.

BRUNSFELSIA *Americana*—American *Brunſfelſia*. (Shrubby.) By ſeed, layers, cuttings, &c.

BUCHNERA—*Buchnera*—Aſiatic of Ceylon—African of Æthiopia. By ſeed, cuttings, &c.

CACALIA—Foreign Colt's-foot—Papillary Fleſhy-ſtalked. (Succulent.) By ſeed, off-ſets, ſlips, and ſuckers.

CACTUS—Melon Thiſtle, Cereus, and Indian Fig—(Globular kinds)—*Melocactus*, or Greater Melon Thiſtle—Mammillary Smaller Melon Thiſtle—Spirally-twiſted Melon Thiſtle—Recurved-ſpined Melon Thiſtle—Childing Melon Thiſtle—(Tall upright kinds)—Heptagonous, or Seven-angled Torch

Torch Thiſtle—Four-ſided Torch Thiſtle—Triangular Torch Thiſtle——Repand, or Waved-angled Torch Thiſtle—Woolly Torch Thiſtle—*Royeni*, or Sub-Ten-angular American Torch Thiſtle—(Trailing creeping kinds)——Flagelliform-ſtalked Cactus, or Common Creeping Cereus—Great-flowered Climbing Creeping Cereus—Paraſitic Taper-ſtriated-branched.—(Compreſſed, or flat-branched-jointed kinds, growing in flat joints out of one another)—*Ficus Indica*, or Indian Fig of South America—Tuna Major, or Greater Indian Fig——Cochineal Indian Fig——Curaſſavian Leaſt Indian Fig—*Phyllanthus*, or Sword-ſhaped Braſilian Indian Fig—*Pereſkia*, or American Gooſeberry——Purſlane-leaved. (All ſucculents, with abiding ſtalks and branches; the Melon Thiſtle kinds conſiſting of globular fleſhy maſſes; the Torch Thiſtle kinds, grow erect like a column, to a great height; the Creeping Cereus have long, round, ſlender ſtalks and branches; and the Indian Figs have flat fleſhy branches in many ſhort joints. By ſeed, cuttings, ſuckers, &c.

CAMELLIA *Japonica*—Japaneſe *Camellia*—Double flowered. (Abiding-ſtalked.) By layers, cuttings, ſuckers, and ſeed.

CANNA—Indian Reed—Common—Variegated-leaved Common Indian Reed—Yellow-flowered—Glaucous-coloured—Narrow-leaved. (Durable-ſtalked.) By ſlips, off-ſets, &c.

CAPPARIS—Caper Tree—Prickly European——Ceylon Oval Acute-leaved—*Baducca*, or Determinate-cluſtered-leaved Indian—Ferrugenous of Jamaica—Flexible-ſtalked. (Shrubby.) By ſeed, cuttings, layers, &c.

CAPSICUM

CAPSICUM——Guinea Pepper, or *Capsicum*——Shrubby; comprising several varieties, such as the Berberry-fruited, Small Conical-fruited——Cayan Pepper——Pyramidal-fruited. (Under-shrubby-herbaceous.) By seed, cuttings, &c.

CARICA—Papaw Tree——*Papaya*, or Common, with sinuated leaves, or Melon-shaped-fruited—*Posopopsa*, or Pear-fruited. By seed, cuttings, layers, &c.

CARYOTA *urens*, or Stinging Palm. (Frondose-stalked, &c.) By off-sets, slips, &c.

CASSIA—Wild Senna—*Fistula*, or Officinal Wild Senna—Privet-leaved——Two-flowered——Alated, or Winged-podded——Bicapsular, or Two-capsuled. (Woody.) By seed, layers, cuttings, suckers, &c.

CASSYTHA *filiforme*——Slender Indian *Cassytha*. (Herbaceous.) By slips, off-sets, &c.

CATESBÆA *Spinosa*——Spinous Lily Thorn. (Shrubby.) By seed, cuttings, layers, &c.

CEDRELA *odorata*—Odoriferous Cedrela, or Barbadoes Cedar. (Shrubby.) By seed, cuttings, layers, &c.

CELASTRUS—Staff Tree—Myrtle-leaved—Box-leaved. By cuttings, layers, &c.

CERBERA *Ahouai*—*Ahouai*, or Oval-leaved *Cerbera*—*Manghas*, or Spear-leaved—*Thevetia*, or Linear Long-leaved. (Shrubby.) By seed, layers, cuttings, &c.

CESTRUM

CESTRUM—Baſtard Jaſmine—Night-ſmelling—Day-ſmelling. (Shrubby.) By ſeed, layers, cuttings, &c.

CHAMÆROPS *humilis*, or Dwarf Palm. (Frondoſe-ſtalked.) By bottom-off-ſets, ſlips, and ſeed.

CARYOPHYLLUS *aromaticus*, or Clove Tree. By cuttings, layers, ſeed, &c.

CHRYSOPHYLLUM—Goldy-leaf, or Star-apple *Cainito*, or Downy-leaved——Smooth-leaved. (Shrubby.) By cuttings, ſlips, ſeed, &c.

CISSUS—Jamaica Wild Grape——Heart-leaved Five-lobed—Entire Heart-leaved—Acid-taſted Fleſhy Cut-leaved—Triſoliate Roundiſh Indented-leaved. (Shrubby-herbaceous.) By cuttings, ſlips, off-ſets, &c.

CITHOREXYLLUM—American Fiddle Wood—Cinerous, or Whitiſh—Quadrangular. (Shrubby.) By layers, cuttings, and ſeed.

CLAYTONIA *Portucalaria*—Purſlane *Claytonia*: (Shrubby.) By ſeed, cuttings, layers, &c.

CLEOME—Baſtard Muſtard——Five-leaved——Seven-leaved. (Herbaceous.) By off-ſets, ſeed, &c.

CLITORIA—*Clitoria*——*Ternatea*, or Pinnated-leaved, the Blue-flowered, White-flowered. (Herbaceous.) By off-ſets, ſeed, &c.

CLUSIA—*Cluſia*—Yellow-flowered of four petals—White-flowered of five petals—Roſeaceous-flowered of ſix petals. (Shrubby.) By ſeed, layers, cuttings, &c.

COCCOLOBA—Sea-ſide Grape——*Uvirſera*, or Common Cluſter-fruited—Punctated, or Spotted-fruited—Small-leaved. (Shrubby.) By ſeed, cuttings, and layers.

COCOS *nucifera*, or Cocoa-nut Tree. By ſeed, &c.

COFFEA—Coffee Tree—Arabian Coffee. By ſeed, &c.

COMMELINA——*Commelina*——African Smooth Spear-leaved—Bengal Oval-leaved. (Herbaceous.) By off-ſets, ſeed, ſlips, &c.

COPAIFERA *officinalis*, or Common Copaiva: (Shrubby.) By ſeed, cuttings, layers, &c.

CORDIA—*Cordia*, or Lignum Aloes—Sebeſtina, or Bowed Rough-leaved——*Myxa*, or Downy-leaved——*Geraſchanthus*, or Lancet-oval Rough-leaved. (Shrubby.) By ſeed, cuttings, &c.

CORNUTIA *pyramidalis*——Pyramidal Cornutia. (Shrubby.) By layers, cuttings, ſeed, &c.

CORYPHA—Thatched Palm——Umbrella-ſhaped. (Frondoſe-ſtalked.) By ſeed, off-ſets, &c.

COSTUS *arabicus*, or Arabian *Coſtus*. (Herbaceous.) By off-ſets, ſlips, ſeed, &c.

COTYLEDON—*Cotyledon*——Laciniated, or Cut-leaved—Sawed-leaved. (Succulent.) By cuttings, off-ſets, heads, &c.

CRASSULA—Leſſer Orpine—Scarlet-flowered—Perfoliated-leaved—Purſlane-leaved—Punctated, or Spotted——Tetragonous-leaved——Orbicular,

Craſſula

Crassula. (Succulent, shrubby, and herbaceous.) *See also green-house.* By cuttings, seed, off-sets, &c.

CRATEVA—Garlick Pear——*Tapia*, or Smooth Indian *Crateva*—Gynandrous-flowered——*Jamaican Marmelos*, or Thorny *Crateva*, with serrated leaves. (Shrubby.) By seed, cuttings, slips, layers, &c.

CRESENTIA *Cujete*, or Calabash Tree. By seed, &c.

CRINUM—Lily Asphodel—Broad-leaved—Asiatic Fleshy-leaved—Variegated Fleshy-leaved——American Twisted-flowered—African Lanceolate Plane-leaved. (Herbaceous.) By off-sets, &c.

CROTALARIA—*Crotalaria*—Chinese Oval-leaved—Amplexicaule-leaved, or the leaves embracing the stalk and branches——Imbricated Oval-leaved—White-flowered of Carolina. (Shrubby and herbaceous.) By seed, cuttings, layers, off-sets, &c.

CROTON——*Croton*——*Cascarilla*, or Erect Tree-stalked, with Rosemary leaves—Sebiferous, or Chinese Tallow-Tree—Smooth-leaved of Jamaica——Shining-leaved Jamaican——Lacciferum, or Lac-bearing Mallow-leaved. (Shrubby, &c.) By seed, layers, cuttings, &c.

CURCUMA—Turmerisk—Long-rooted—Round-rooted. (Herbaceous.) By seed, off-sets, &c.

CYCAS—Sago Palm Tree. By seed, &c.

CYNANCHUM *hirtum*——Hairy American Scammony. (Shrubby.) By seed, cuttings, &c.

CYTISUS *Cajan*—Cajan, or Indian Pigeon Pea. (Underſhrubby.) By ſeed, ſlips, cuttings, &c.

DILEMA *ſarmentoſa*—Long-ſhooted Ceylon *Dilema*. (Shrubby.) By ſeed, layers, cuttings, &c.

DIOSCOREA—*Dioſcorea*, or Jamaica Yamms——Bulb-bearing Heart-leaved—Cultivated Alternate Heart-leaved——Oppoſite Oval-leaved——Five-leaved Digitated. (Herbaceous.) By off-ſets, ſeed, &c.

DRACONTIUM—Dragons—-Perforated-leaved—Climbing-ſtalked—-Thorny, with arrow-headed leaves—Many-leaved of Surinam. (Shrubby and herbaceous.) By ſeed, cuttings, layers, off-ſets, &c.

DURANTA—*Duranta*—*Elliſia*, or Erect *Duranta*—Plumiers Contorted *Duranta*. (Shrubby.) By cuttings, layers, ſeed, &c.

EHRETIA—*Ehretia*—Tinus-leaved of Jamaica—*Bourreria*, or Bay-leaved——Exſuccous Wedge-lancet-leaved. (Shrubby.) By ſeed, layers, cuttings, &c.

ELÆOCARPUS *ſerrata*—Saw-leaved Elæocarpus. (Shrubby.) By ſeed, cuttings, layers, &c.

ELEPHANTOPUS—Elephant's-Foot—-Scabrous, or Rough-leaved—Downy-leaved. (Herbaceous.) By ſeed and off-ſets.

ERYTHRINA—Coral Tree—Corallodendrum, or True Coral Tree—Oriental Coral Tree—Occidental Coral Tree——*Erythrina picta*, or Black-ſpined—Herbaceous Annual-ſtalked. (Shrubby and

and herbaceous.) By ſeed, layers, cuttings, off-ſets, ſlips, &c.

EUGENIA—*Eugenia*, or Pomey Roſe——Malacca Red-fruited, or Lateral-flowered——*Jambos*, or Terminal-flowered. (Shrubby.) By ſeed, layers, cuttings. &c.

EUPHORBIA—Euphorbium, or Burning Thorny Plant——Oleander-leaved——Rhus-Cotinus-leaved Triangular, or True Euphorbium of the Ancients —Canary Quadrangular Euphorbium. (Succulent and ſhrubby.) See alſo the green-houſe collection. By cuttings, ſlips, heads, off-ſets, ſeed, &c.

FAGARA—— *Fagara*——*Pterota*, or Emarginated-leaved of Jamaica—*Piperita*, or Crenated-leaved. (Shrubby.) By cuttings, layers, and ſeed.

FICUS—Fig Tree—*Sycomorus*, or Egyptian Fig—Sacred Fig, or Indian God Tree—Bengal Oval-roundiſh-leaved—Cluſter-fruited—Maculated, or Spotted-fruited—— Indian Lanceolate-leaved—— Dwarf Creeping Chineſe and Japan Fig. By layers, cuttings, ſuckers, &c.

GARDENIA, or Cape Jaſmine—Single-flowered —Double-flowered. (Shrubby.) By cuttings, layers, &c.

GENIPA *Americana*—American *Genipa*. (Shrubby.) By cuttings, layers, ſeed, &c.

GESNERIA *tomentoſa*—Downy *Geſneria*. (Shrubby.) By cuttings, layers, &c.

GLORIOSA *ſuperba*—Superb Lily. (Herbaceous.) By off-ſets, &c.

GOMPHRENA—Globe-Amaranthus—Perennia of Bonaria. (Herbaceous.) By ſlips, off-ſets, ſeed, &c.

GOSSYPIUM *arboreum*—Tree, or Shrubby Cotton. By ſeed, cuttings, &c.

GREWIA *orientalis*, or Eaſtern of India—Occidentalis, or Weſtern of Æthiopia, &c. (Shrubby.) By ſeed, layers, cuttings, &c.

GUAJACUM—Lignum Vitæ—Officinal, or Common, with bijugated obtuſe leaves—*Sanctum*, or Multijugated-obtuſe-leaved——African Multijugated-acute-leaved. (Woody.) By ſeed, layers, cuttings, &c.

GUETTARDA *ſpecioſa*——Speciofe Jamaica Guettarda. (Woody.) By ſeed, layers, &c.

GUILANDINA——Nicker Tree——*Bonauc*, or Greater Indian—*Bonducella*, or Leſſer—*Moringa* of Ceylon—*Nuga ſilvarum* of Aboina. (Woody, &c.) By ſeed, cuttings, &c.

HÆMANTHUS—Blood-flower—Coccineous, or Scarlet-flowered of the Cape—Ciliated-leaved—Puneceous, or Red of Guinea—Carinated, or Keel-ſhaped-leaved. (Herbaceous.) By off-ſets, ſeed, &c.

HÆMATOXYLUM *Campechianum*—Campeachy Wood, or Logwood. By ſeed, cuttings, layers, &c.

HEDYSARUM—French Honeyſuckle—*Styracifolium*, or Styrax-leaved—Biarticulated, or Two-jointed-podded—Umbelliferous-flowered——Elegant-foliated——*Ecaſtaphyllum*, or Silky-leaved. (Shrubby and underſhrubby.) By ſeed, cuttings, layers, &c.

HELIC-

HELICTERES—Screw Tree—*Isora*, or Common Indian Screw-shaped-fruited———Carthagenian Oblong Erect-fruited—-Narrow-leaved Chinese. By seed, layers, cuttings, &c.

HELIOCARPUS *Americana*. (Shrubby.) By seed, layers, cuttings, &c.

HELIOTROPIUM—Heliotrope, or Turnsole—— Peruvian Lanceolate-oval-leaved——Shrubby of Jamaica—Gnaphalode Downy-leaved. (Shrubby.) By cuttings, seed, &c.

HERNANDIA—Jack-in-a-Box Tree——Sonorous, or Common Whistling, with peltated leaves—Oval-leaved. By seed, layers, and cuttings.

HIBISCUS—Syrian Mallow——*Malvaviscus*, or Mallow-leaved Mexican—Fig-leaved——Lime-tree-leaved—*Abelmoschus*, or Musk-flowered—— Poplar-leaved—Spinose Capsuled of America—Brasilian Mulberry-leaved—*Manihot*, or Palmated-digitated Seven-lobed-leaved—*Rosa Sinensis*, or Rose of China, single and double—Mutable, or Changeable-flowered China Rose—Hairy, with herbaceous stalks. (Mostly shrubby or under-shrubby, the last herbaceous.) By cuttings, slips, layers, off-sets, &c.

HIPPOMANE—*Hippomane*—*Mancinella*, or Mancineel Apple——Biglandular-leaved, having two glands at the base—Prickly-leaved. (Tree and shrubs.) By seed, layers, cuttings, &c.

HURA *crepitans*—*Hura*, or Bouncing Tree. By seed, &c.

HYMENÆA *Courbaril*—*Courbaril*, or Gum Elemi Tree. By layers, cuttings, seed, &c.

JATROPHA

JATROPHA—French Physic-Nut—Cotton-plant-leaved, of five lobes—Multifid, or Many-parted-leaved—Moluccanian Entire-leaved—*Curcas*, or Heart-angular-leaved—Stinging Palmated-dentated-leaved—Herbaceous of Vera Cruz. (Woody, and one herbaceous.) By seed, cuttings, layers, off-sets, &c.

INDIGOFERA—Indigo Plant——Tinctoraceous, or Dying Shrubby Indigo—Racemose, or Long-clustered—Hairy-podded—Trifoliate. (Shrubby and herbaceous.) By seed, cuttings, off-sets, &c.

JUSSIÆA——*Jussiæa*—Creeping Indian—Peruvian Upright—Undershrubby. (Herbaceous and shrubby, &c.) By cuttings, off-sets, seed, &c.

JUSTICIA——*Justicia*, or Malabar Nut Tree——Adhatoda, or Concave-flowered——*Ecbolium*, or Reflexed-flowered—Hyssop-leaved of the Island Fortunatis—Funnel-shaped Large-flowered——Painted-leaved. (Tree and shrubby.) By seed, cuttings, suckers, layers, &c.

IXORA—Wild Indian Jasmine—Scarlet-flowered—White-flowered—American Thyrse-flowering—Ternate-leaved Thyrse-flowering. (Shrubby.) By seed, cuttings, layers, suckers, &c.

KEMPFERIA—Kempferia——*Galanga*, or Oval-leaved——Round *Zedoaria*, or Lanceolate-leaved *Kempferia*. (Herbaceous.) By off-sets, seed, &c.

LAGERSTRŒMIA *Indica*——Indian of China. (Woody.) By cuttings, layers, seed, &c.

LANTANA——American Viburnum——Three-leaved—*Camara*, or Branching-stalked, without spines——Spinous Branching-stalked——Involucrum.

lucrum Leafy-ſtalked. (Shrubby.) By ſeed, layers, cuttings, &c.

LAURUS—Bay Tree—*Cinnamomum*, or Cinnamon Tree of Ceylon—*Caſſia*, or Baſtard Cinnamon of Malabar——*Perſea*, or Alligator Pear of South America——*Camphora*, or Camphire Tree. (Shrubby.) By ſeed, layers, cuttings, ſuckers, &c.

LIMODORUM—Baſtard Hellebore—Tuberous-rooted of America. (Herbaceous.) By off-ſets, ſlips, ſeed, &c.

LIMONIA *acidiſſima*——Acid *Limonia*, or Mandarine Orange, or Wild Ceylon Apple. (Woody.) By cuttings, layers, ſeed, &c.

LOBELIA—Cardinal-Flower, or *Lobelia*—Surinam Underſhrubby——Long-flowered of Jamaica. (Shrubby and herbaceous.) By ſeed, ſlips, cuttings, off-ſets, &c.

MALPHIGIA——Bardadoes Cherry——Smooth Oval-leaved——Holly-leaved——Verbaſcum, or Moth-mullein-leaved——Thick-leaved——Glittering-leaved——Stinging-leaved——Coccigerous, or Scarlet-bearing Holly-leaved——Narrow-leaved. (Shrubby.) By ſeed, layers, cuttings, &c.

MAMMEA—Mammee Apple—American Short-flowered——Aſiatic Long-flowered. (Woody.) By ſeed, layers, cuttings, &c.

MANGIFERA *Indica*——Indian Mango Tree—— By cuttings, layers, ſeed, &c.

MARANTA—Indian Flowering Reed—Arundanceous Branchy-ſtalked—*Galanga officinarum*, or Simple-

Simple-ſtalked *Maranta*, or Indian Arrow-root. (Herbaceous.) By ſlips, off-ſets, cuttings, &c.

MELOSTEMA—American Gooſeberry—Velvety Trinervous-leaved——Hairy Quinquenervous-leaved——Smooth Quinquenervous-leaved——Trinervous-leaved—Curled, or Waved-branched. (Shrubby.) By cuttings, ſlips, layers, ſeed, &c.

MESUA *ferrea*, or Indian Roſe Cheſnut. (Woody.) By ſeed, layers, cuttings, &c.

MICHELIA *Champaca*. (Shrubby.) By cuttings, ſeed, layers, &c.

MIMOSA——*Mimoſa*, or Senſitive and Humble Plant, Acacia, &c.——Senſitiva, or Common Senſitive Plant, with conjugate-pinnated leaves——*Pudica*, or Humble Plant, with digitated, or fingered-pinnated leaves—Pernambucan Decumbent-ſtalked, with doubly-pinnated leaves—*Vivaceous*, or Lively Smooth Herbaceous Senſitive Plant——Aſperated, or Rough Senſitive——Punctated, or Spotted-ſtalked——Tortuoſe Mimoſa of Jamaica——Double-flowered or Annual Senſitive Plant—Quadrivalve-podded, with Quadrangular ſtalks——Farneſian, or Indian Acacia, or Italian Gazia—Nilotic, or True Acacia, or Gum Arabic—*Cornigera*, or Great Horned Acacia—Broad-podded——Horrid-ſpined——Tree-ſtalked *Mimoſa* of Jamaica—*Mimoſa pigra*, or Long-recurved-ſpined—Purple-flowered. (Shrubby and herbaceous.) By ſeed, layers, cuttings, &c.

MUSA *paradiſiaca*—Tree of Paradiſe, or Plantain-Tree, with a nodding ſpatha—*Bikai*, or American Muſa, with an erect perſiſtent ſpatha—*Muſa Sapientum*, or Spotted-ſtalked. (Tree ſtalks, of an herbaceous nature.) By ſeed, &c.

MYRTUS

MYRTUS—Myrtle Tree——Ceylon Myrtle——Dioeceous-flowered—Biflorous of Jamaica—Caryphyllate, or Clove-ſcented of Ceylon—*Pimento*, or Allſpice. By cuttings, layers, ſeed, &c.

NEPENTHES *diſtillatoria*—Marvellous Diſtilling Plant. (Herbaceous.) By ſeed, off-ſets, &c.

NYCTANTHES—Arabian Jaſmine—*Sambac*, or Arabian Jaſmine, ſingle and double-flowered—Waved-leaved—Narrow-leaved——*Arbor triſtis*, or Sorrowful Tree. (Shrubby.) By ſeed, cuttings, layers, &c.

OMPHALEA—*Omphalea*—Diandrious-flowered, with oval leaves——Triandrious-flowered, with oblong leaves. (Shrubby.) By cuttings, layers, ſeed, &c.

OPHIOXYLON *ſerpentinum*—Serpent Ophioxylon. (Shrubby.) By ſeed, cuttings, &c.

PANCRATIUM—Lily Narciſſus, or Pancratium Lily——Ceylon Reflexed-flowered——Mexican Two-flowered——*Caribæan* Multiflorous Spear-leaved—Amboina Many-flowered Oval-leaved. (Herbaceous.) By off-ſets, ſeed, &c.

PARKINSONIA *aculeata*. (Shrubby.) By ſeed, layers, and cuttings.

PASSIFLORA—Paſſion-Flower—Serrated-leaved—Bay-leaved—Suberoſe, or Cork-barked—Silky-leaved—Capſular-fruited—Bat's-wing-leaved—Quadrangular-ſtalked—Apple-fruited—*Murucuja*, or Lunated-leaved. (Shrubby and herbaceous.) By cuttings, layers, ſeed, &c.

PENTA-

PENTAPETIS—Indian Vervain Mallow—Scarlet-flowered—Cork Tree-leaved—Maple-leaved. (Herbaceous and ſhrubby.) By ſlips, cuttings, &c.

PETIVERIA—Guinea Henweed—Alliaceous, or Garlick-ſcented, with hexandrious-flowers——Octandrious-flowered. (Shrubby.) By cuttings, ſlips, ſeed, &c.

PHYLANTHUS——Love-Flower——Great Oval Entire-leaved——*Epiphyllanthus*, Lanceolate-ſerrated-leaved——Madagaſcar Alternate Wedge-ſhaped-leaved—*Emblica*, or Pinnated Floriferous-leaved. (Shrubby and tree ſtalks.) By ſeed, cuttings, &c.

PHYSALIS—Winter Cherry——Curaſſaon Oval Downy-leaved——Arboreſcent, or Tree-ſtalked—Hairy Oval-leaved of Campeachy. (Shrubby.) By ſeed, cuttings, &c.

PHYTOLACCA—American Nightſhade—Dioecious-flowered, with oval leaves—Octandrious and Octagynous-flowered—Decandrious and Decagynous-flowered——Icoſandrious and Decagynous-flowered. (Shrubby and herbaceous.) By ſeed, cuttings, off-ſets, &c.

PIPER—Pepper Plant—Black Round-fruited——Reticulated, or Netted-leaved—Obtuſe-leaved—*Betele*, or Oval-oblong Acute-leaved—Aduncos-fruited of Jamaica. (Shrubby and herbaceous.) By cuttings, layers, &c.

PISCIDIA *Erythrina*—*Erythrina*, or Jamaica Dog-wood, or Oval-leaved *Piſcidia*——Carthagenian Oboval-

Oboval-leaved. (Shrubby.) By ſeed, layers, cuttings, &c.

PISONIA——Prickly-ſpreading Spined, or Jamaica Fringrego—Spineleſs of India. (Shrubby.) By cuttings, ſeed, layers, &c.

PLUMBAGO—Leadwort—Ceylon Slender-ſtalked—Roſeacous-flowered Indian, with jointed-ſwelling ſtalks—Climbing-ſtalked. (Shrubby.) By ſeed, layers, cuttings, &c.

PLUMERIA—Indian Red Jaſmine—Red-flowered—White-flowered—Obtuſe-leaved. (Shrubby.) By ſeed, layers, cuttings, &c.

POINCIANA—Barbadoes Flower Fence—Smooth-ſtalked—Bijugated-leaved, with ſingle ſpines—Elegant *Poinciana*, with double ſpines. (Shrubby.) By cuttings, ſeed, layers, &c.

POLYANTHES—Tuberoſe—Single-flowered——Double-flowered. (Herbaceous.) By off-ſets of the root, &c.

POLYPODIUM *aureum*——Golden *Polypodium*, or Hare's-foot Fern. (Herbaceous.) By off-ſets, ſlips, &c.

PORTLANDIA—*Portlandia*—Great-flowered——Hexandrious-flowered. (Shrubby.) By ſeed, cuttings, &c.

PTERIS *candata*—Jamaica Fern—Linear, or Graſs-leaved—Several other ſpecies. (Herbaceous.) By off-ſets, ſlips, &c.

RANDIA—*Randia*—Subinermous, or almoſt without ſpines—Prickly Two-ſpined. (Shrubby.) By cuttings, ſeed, layers, &c.

RAUVOLFIA *nitida*, or Glittering *Rauvolfia*. (Shrubby.) By ſeed, cuttings, &c.

RIVINIA—*Rivinia*——Dwarf, with tetrandrious flowers—Hoary Dwarf——Octandrious-flowered. (Shrubby.) By ſeed, cuttings, layers, &c.

RONDELETIA—*Rondeletia*——American Seſſile-leaved—Aſiatic Foot-ſtalked-leaved. (Shrubby.) By cuttings, ſeed, layers, &c.

SACCHARUM—Sugar-Cane—Officinal or Common, with paniculated flowers—Spiked-flowered, with waved leaves. (Herbaceous, of the arundinaceous or reedy tribe.) By off-ſets, cuttings, &c.

SALICORNIA—Glaſs-wort—Fruticoſe, or Shrubby——Caſpian Articulated, with filiform ſpikes. (Shrubby-ſucculent) By cuttings, ſlips, off-ſets, &c.

SAPINDUS, or Soap-berry—*Sapmaria*, or Common Soap-berry——Trefoliate-leaved——Prickly-ſtalked. (Shrubby.) By ſeed, cuttings, ſuckers, layers, &c.

SENECIO—Groundſel—*Pſeudo-China*, or Baſtard China-Root—Haſtulate-leaved African *Senecio*—Pubigerous, or Woolly——Poplar-leaved—Stiff-leaved. (Herbaceous and ſhrubby.) By off-ſets, ſlips, cuttings, layers, ſeed, &c.

SIDA—Indian Mallow——Triquetrous-branched Shrubby——Capitated-flowered. (Herbaceous.) By cuttings, layers, &c.

SIDEROXYLUM—Ironwood—Smooth—Prickly. By ſeed, layers, cuttings, &c.

SOLANUM

SOLANUM——Nightſhade——Sodom-Apple, or Apple-bearing Shrubby Nightſhade—Moth-mullein-leaved—Fiery-ſpined—Buones-ayres Wedge-ſhaped-leaved—Oak-leaved of Peru——Rooting-ſtalked—Peruvian Pinnated-leaved. (Shrubby and herbaceous.) By ſeed, cuttings, ſlips, &c.

SOPHORA—*Sophora*—Tomentoſe Silvery of Ceylon, or Silvery Colutea——Heptaphyllous, or Seven-leaved——Biflorous, or Two-flowered. (Shrubby.) By cuttings, layers, ſeed, &c.

SPONDIAS—Black American Plum—Purple-fruited——Yellow-fruited. (Shrubby.) By ſeed, layers, cuttings, &c.

STAPELIA—African Swallow-wort, or Stapelia—Variegated, with ſpreading branches—Hairy, with erect branches. (Shrubby-ſucculent.) By cuttings, ſlips, layers, ſeed, &c.

STERCULIA *fœtida*—Stinking Sterculia, or Dirt-wood, with digitated or fingered leaves—*Balanghas*, or Oval Entire-leaved. (Shrubby.) By layers, cuttings, ſeed, ſuckers, &c.

SWIETENIA *Mahagoni*, or Mahogany Tree of America. By ſeed, layers, &c.

TAMARINDUS *Indicus*, or Indian Tamarind Tree. By ſeed, layers, cuttings, &c.

THEOBROMA—Chocolate-nut Tree—*Cacao*, or Common Chocolate-nut, with entire leaves——*Cuazuma* Tree, or Sawed-leaved *Theobroma*. By ſeed, &c.

TINUS *occidentalis*——Weſtern, or Jamaica Bay-leaved *Tinus*. (Shrubby.) By layers, cuttings, ſeed, &c.

TOURNEFORTIA—*Tournefortia*——Serrated-leaved—Hairy-ſtalked——Volubilate, or Climbing-ſtalked——Stinking-leaved——Cymoſe-ſpiked——Dwarf Seſſile-leaved——Suffruticoſe, or Under-ſhrubby. (Shrubby.) By cuttings, layers, ſeed, &c.

TRIUMFETTA—*Triumfetta*—*Lappula*, or Emarginated-leaved. (Shrubby.) By cuttings, ſeed, layers, &c.

TURNERA——*Turnera*——Elm-leaved. (Under-ſhrubby-herbaceous.) By ſeed, cuttings, ſlips, &c.

URENA—*Urena*—China Mallow——Lobated-angular-leaved—Sinuated-palmated-leaved——Procumbent, or Trailing-ſtalked. (Shrubby.) By ſeed, ſlips, cuttings, off-ſets, &c.

URTICA—Nettle—Snowy Chineſe Nettle—Bacciferous, or Berry-bearing Shrubby American Nettle. (Herbaceous and ſhrubby.) By off-ſets, ſlips, cuttings, &c.

VERBESINA—Indian Hemp Agrimony—Winged-ſtalked of Curaſſoa. (Herbaceous.) By ſlips, off-ſets, &c.

VINCA—Periwinkle—Roſe Periwinkle of Madagaſcar. (Shrubby.) By cuttings, layers, &c.

VIXTEX *pinnata*—Pinnated-leaved Chaſte Tree of Ceylon. By cuttings, layers, &c.

VITIS

VITIS—Vine—Indian Heart Dentated-leaved, with racemiferous claſpers———Trifoliated-leaved. (Shrubby.) By layers, cuttings, &c.

VOLKAMERIA—Smooth—Prickly. (Shrubby.) By layers, cuttings, ſeed, &c.

WINTERANIA—*Winterania*, or Baſtard Cinnamon——*Canella*, or Wild Barbadoes Cinnamon. (Shrubby.) By ſeed, layers, cuttings, &c.

XYLOPHILLA *Latifolia*, or Broad-leaved *Xylophilla*. (Herbaceous.) By off-ſets, ſeed, cuttings, &c.

ZAMIA *Pumila*, or Dwarf Palm. (Frondoſe-ſtalked.) By ſeed, off-ſets, &c.

Next follows the method of propagation uſed in raiſing the various plants of this collection, and their culture throughout the year in the hot-houſe; that as to propagation, they are raiſed by ſeveral ways in the different ſorts, as by ſeed, ſuckers, ſlips, layers, cuttings, parting-roots, root-off-ſets, ſide-off-ſets, heads, &c. as hereafter explained; and in the general culture of the plants, they muſt all be kept in pots, ſuited to their reſpective ſizes and nature of growth; ſmall pots at firſt, and ſhifted into larger occaſionally as they require it in their advanced ſtate; and the more curious and valuable ſorts, ſuch as the Pines, &c. muſt be plunged in the bark-bed, conſtantly to remain, and the other plants diſpoſed in different parts of the houſe; and almoſt all the ſorts muſt be continued always in the hot-houſe or ſtove, having a continual bark-bed heat the year round, with the aſſiſtance of fire-heat in Winter: but for the particulars of the management, ſee the article of their *general culture*; alſo the following article of the *methods of propagation*.

General Methods of Propagation.

WITH regard to the methods of propagating or raiſing the various plants of this collection, ſeveral ways are practiſed occaſionally in the different ſorts, as before obſerved, ſuch as by ſeed, ſuckers, crowns, ſlips, cuttings, layers, root-off-ſets, ſide-off-ſets, heads, parting-roots, &c. and all of which may be readily aſſiſted by the heat of the bark-bed, &c. by plunging the pots of ſeed, cuttings, ſuckers, &c. therein; and the ſeaſon for performing theſe works of propagation, is principally in the Spring, for ſowing the ſeeds; alſo for any of the other methods, in March, April, and May, though it may alſo, in many caſes, be effected in the Autumn, about Auguſt and September, ſuch as in ſuckers, off-ſets, &c. which ſome ſorts of plants do not furniſh of eligible growth for detaching and planting till the Autumn ſeaſon, as in moſt of the Pine-apples, and ſeveral of the ſucculent tribe, and others.

Let ſeeds, however, of ſuch ſorts as can be procured, be generally ſowed in the Spring, or as ſoon as they are obtained, in pots of light rich earth, and either plunge the pots in the bark-bed of the hot-houſe, or in ſome other, under protection of glaſs-work, &c. for the ſeed of thoſe very tender plants muſt have the aſſiſtance of bottom heat; giving moderate waterings; and when the young plants are of two or three inches growth, prick them out in ſeparate ſmall pots, and plunge them in a bark-bed.

Concerning the other afore-mentioned methods of propagation, ſuch as by ſuckers and off-ſets from the root or bottom of the plant, or from the ſides of the ſtem or head, &c. and by crowns on the top of the fruit, and ſuckers at the baſe thereof, as in the Pine-apple, by ſlips, cuttings, and layers of

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the ſhoots or branches, &c. and by parting the roots, all the plants of this collection may be increaſed by one or other of theſe different ways, and ſome of them by ſeveral of the methods; and the whole is explained under each claſs, as the woody, ſucculent, and herbaceous tribe, as hereafter.

But as the Pines are generally conſidered as the principal of the hot-houſe plants, for the ſake of their fruit, and as in many places the hot-houſes are erected principally for the culture of theſe curious exotics, we firſt proceed to explain the general methods of their propagation, being by ſuckers, crowns, &c. as below.

In the Pine-apple, the ſuckers ariſing both from the bottom of the plants, and at the baſe of the ripe fruit, and alſo the crowns on top of the apple, are the only methods by which the plants are propagated for the general ſupply; and theſe productions for propagation are commonly of a proper growth for this purpoſe, in Summer and Autumn, according as the fruit arrives to maturity; which when ripe, and gathered for table, the bottom ſuckers which ſhoot up from the root, or between the bottom leaves of the plants, that if then of a proper growth, four, five, or ſix inches long, and moderately firm at bottom, may be detached for planting, or permit them to remain to obtain a more mature growth on the mother-plant for two or three weeks after cutting the fruit, then ſlipped off for planting; and as to the ſmall ſuckers and off-ſets emitted at the bottom of the fruit, they may be taken off as ſoon as it is gathered, but the crown at top muſt remain till the fruit is ſerved up to table, then, when it is to be eaten, take off the crown of leaves clean, by a gentle twiſt, and retained for planting, as it will grow freely, and become a proper fruiting plant in two years, producing ripe Pine-apples, as good as that which produced it; obſerving, both of the ſuckers and crowns, that

as

as they are of a ſucculent nature, it is proper, previous to planting, to lay them upon a dry ſhelf, in the ſhade, in the hot-houſe a few days, to heal over the moiſt part at bottom before planted, leſt the moiſture iſſuing at that part, occaſion them to rot in the earth after planting; then, having a quantity of rich light earth, and ſmall pots, (32s or 48s) filled with the earth, ſet one plant in each, give a little water, and plunge them either in the bark-bed of the ſtove, or elſe under glaſſes, or in a horſe dung hot-bed, under frames and lights, having ſix inches of earth, or tan, upon the dung, in which to plunge the pots.

Let the plants have water moderately at times, and admit freſh air, by opening the glaſſes a little in warm days; they will ſtrike good root and grow freely.

They may remain in thoſe ſmall pots till next Spring, and continued either in the bark-bed in the hot-houſe, or ſucceſſion pit, where there is room, or if not, in ſubſtantial hot-beds, under garden-frames and glaſſes, as aforeſaid, ſupported in a good heat all Winter, both by ſtrong linings of hot dung to the ſides of the bed, and ſhifted into a new bed occaſionally, aſſiſted alſo with linings when the heat declines, and the glaſſes covered with mats every night; and in ſevere weather, lay dry long litter around the outſides of the frame.

In the Spring, if the young plants have made good progreſs, may ſhift them about April, with the ball of earth about their roots, into pots of a ſize larger, and replunge them in a good bark-bed, in the ſtove, or ſucceſſion-houſe or pit; and in next Autumn, in Auguſt or September, or the following April, according to their advanced growth, ſhift them again, with balls, into the large pots, (24s or 16s) where they are to remain to fruit, then plunged in the bark-bed of the ſtove, or ſucceſſion-houſe, till next October; and then, they commencing fruiting

fruiting plants, muſt be removed, in their pots, into the fruiting-houſe, having the bark-bed previouſly replenifhed with entire new tan, and when of a proper heat, plunge the pots of plants therein; managing them as in the directions for the *general culture* of the *hot-houſe*; and they will produce Pine-apples the following Summer; and alſo a ſupply of young plants at the ſame time, for future propagation, for the old plants, after having fruited and furniſhed ſuckers for further ſucceſſional increaſe, are not uſed any more, but a ſucceſſion of young plants raiſed annually, as above.

But as the young ſucceſſion Pine plants, both of the crowns and ſuckers, that if either forced too much in Winter, by over ſtrong fire-heat, or ſtinted for want of a due warmth in the bark-bed about the roots, they are, in both extremes, apt to run to fruit in their minor ſtate the firſt year, when the plants are not of quarter ſize, the fruit will be ſmall and inſignificant, which would prove a great diſappointment in the requiſite ſupply of ſucceſſion full-ſized fruiting plants; ſo great care is required in Winter, neither to have a too ſtrong heat of fire particularly, nor let the plants want a good bottom in the bark-bed.

In propagating the tree and ſhrub exotics of this department, either by ſuckers riſing from the root or ſtem, &c. or by cuttings or ſlips of the young ſhoots of the branches, or by layers thereof, they may all be planted, &c. in the Spring, in March, April, or May, in pots of rich light earth, either ſingly or ſeveral cuttings, &c. together in each, if large pots; giving water, and plunge them in the bark-bed, and if the ſlips, or cuttings, are alſo covered cloſe down with hand-glaſſes, it will forward their rooting more effectual and expeditious; giving repeated neceſſary waterings in general as required; and when they are properly rooted, and have ſhot at top, may be tranſplanted in Autumn or

or Spring following into ſeparate pots, plunging them in the bark-bed till they ſtrike freſh root.

The propagation of the ſucculent tribe, being both by ſeed, ſowed in the manner already directed, and by ſuckers from the bottom, cuttings or ſlips of the ſtalks, branches, or heads, ſide-off-ſets, ſhoots from the root, head, ſtem, &c. and ſome furniſhing no ſuckers, ſlips, off-ſets, or any ſtalk, branches, or ſhoots, for cuttings, are propagated ſometimes by cuttings of the fleſhy leaves, or root, or by viviparous, or childing young plants ſucceeding the flowers, as in the Childing Aloe, &c.

Thus, in this ſingular tribe of plants, the methods of propagation are various, according to their nature of growth; the ſuckers, ſlips, &c. may be taken off either in Spring, Summer, or Autumn, when they are of a proper growth, according to the nature of growth of the reſpective parent plants; detaching the bottom one with as much root part as poſſible, and if they are very ſucculent at bottom, lay them to dry and heal over, as explained below, then planted in ſeparate pots of light ſoil; and as to cuttings and ſlips of the ſtalks, branches, heads, &c. alſo ſide-off-ſet ſhoots, from any part, may be cut or ſlipped off almoſt any time in the advanced ſeaſon of the Spring, or in Summer, lay them upon a ſhelf, &c. in the ſhade a few days or a week, till the wound made at bottom, by ſeparating from the mother-plant be healed over, which is a neceſſary precaution in very ſucculent plants, before planting the ſuckers, cuttings, &c. otherwiſe the moiſture thereof flowing at the wounded part will be apt to rot them in the earth, but being prepared as above, plant them in ſmall pots of light ſandy earth; give a very moderate watering, and plunge them in the bark-bed of the ſtove, or in the ſucceſſion Pine-houſe or bark-pit; and by the heat of which they will emit roots freely in a ſhort time.

But

But ſometimes, in default of other means, ſome kinds of thick-leaved ſucculents are propagated by planting cuttings of their fleſhy leaves, or pieces of the thick horizontal roots; and in ſuch, as the Childing Aloe, which rarely produce ſuckers, or afford any means of cuttings, &c. but produce many young perfect plants, formed on the flower-branches after they flower, and which being planted will grow; though as this kind of Aloe never flowers till many years old, its propagation by this method can only be effected when it flowers, which renders this ſpecies ſcarce, and which ſort, although introduced here among the ſtove plants, will alſo ſucceed tolerably among the green-houſe exotics.

And as to the propagation of the herbaceous perennials in this collection, it, beſides the method by ſeed, before directed, is effected by parting the roots, ſide-off-ſet ſhoots, ſuckers, or ſlips from the root and heads, &c. and which may be performed either in Spring or Autumn, or any time before or after the plants ſhoot up to ſtalk, or in any other advanced growth, eſpecially for parting or dividing the roots of ſuch as admit of that method; or alſo, towards the Autumn ſeaſon, when the plants which afford the off-ſets, ſuckers, or ſlips, &c. furniſh them of proper growth for taking off and planting; let them as ſoon as ſlipped, both thoſe in parting the roots, and of the ſuckers, ſlips, ſide-off-ſets, or heads, &c. be planted in pots of good earth, and give water, and if then directly plunged in the bark-bed, the heat thereof will promote their rooting very expeditious and effectual.

In the different propagations, when the plants, either ſeedlings, ſuckers, &c. are advanced in growth, tranſplant them into larger pots, as directed under the following head of *general culture*, as they muſt always be retained in pots, and managed as

as in the following general directions for the management of *hot-houſe and various plants.*

General Management of the Hot-houſe, and the various Plants, in Winter, Spring, Summer, and Autumn.

ALL hot-houſe or ſtove plants, according as obtained, muſt be planted in pots, and always retained therein, as formerly ſuggeſted, in order for being arranged in the different parts of the houſe as required, and to be always continued in this department; having proper earth, or compoſt, ſuited to the nature of the different plants, as explained below, and proper-ſized pots, ſmaller or larger, according as the plants are in growth, generally, however, but ſmall at firſt, (32s or 48s) in ſmall plants, and as they increaſe in volume, ſhift them into larger pots, in proportion, as hereafter directed; and all the plants in their pots to be conſtantly in the hot-houſe, &c. aſſiſted by bark-bed heat all the year, eſpecially the general hot-houſe for Pines and a collection of other exotics; and the aid alſo of fire-heat from October till April or May, ſufficient to warm the internal air of the houſe, to a degree of heat equal to that of the hot countries in which the plants naturally grow, and this temperature of heat muſt be maintained equally at all ſeaſons of the year, which is effected abundantly by the bark-bed heat only in the Summer ſeaſon, but in Winter requires both the aſſiſtance of bark and fire-heat to ſupport a proper temperature for the preſervation and ſucceſsful growth of this claſs of plants; having, as a more certain guide to regulate the heat, a proper hot-houſe thermometer, which may be had at the mathematical inſtrument-makers, and having the degrees of heat marked thereon, and a liquid ſpirit

ſpirit contained in a glaſs tube, which riſes by the warmth of the internal air, and this being kept to a temperature to raiſe the ſpirit to the ſtandard mark, *Ananas*, or Pine-apple, is the proper heat for hot-houſe plants in general, or within five or ten degrees over or under.—See the culture farther on.

But firſt to exhibit ſome general hints reſpecting the proper ſoil and method of planting the various ſtove plants, obſerve as below.

That for planting the different hot-houſe plants occaſionally as required, or for ſhifting into larger pots of freſh earth, be careful to have a ſupply of proper mould, or compoſt, ready prepared in a heap for this purpoſe; that, for the Pines, and almoſt all the woody and herbaceous plants, any good, light, rich earth from the quarters of the kitchen garden will prove very ſucceſsful, or a compoſt of rich, light garden earth, light mellow loam, and a quantity of rotten dung, all well blended together for ſome months in an expoſure open to the ſun and free air, and ſometimes turned over, will be very effectual; though may have two or three different ſimilar compoſts, formed of a lighter and ſtronger ſubſtance, to ſuit different plants more equally; but for the ſucculent tribe, have a compoſition of a light dry ſubſtances, as any light ſandy earth, or light, dry, poor garden mould, and ſandy, or ſifted rubbiſhy ſoil mixed together, for theſe ſorts being naturally very replete with moiſture, a too rich or moiſt earth, would be apt to occaſion ſome ſorts to rot, eſpecially when firſt planted.

In planting the different kinds of hot-houſe plants, having the pots ready, place pieces of tile or oyſter-ſhell over the bottom holes, as obſerved in the green-houſe kinds, &c. then put in ſome earth; and in ſuch of the plants as can be tranſplanted from other ſmaller pots, with the balls of earth about their roots, ſhould have it done with care; and in others tranſplanted with balls, as ſhall

be convenient, placing the plants uprightly in the new pots intended, and fill up round the roots with more earth to the top of the pot, and give directly a little water to settle the earth close, and promote their more speedy rooting afresh; or, in planting small-rooted plants, without balls of earth about the roots, may previously fill the pots with proper earth, and then open small apertures in the earth for the insertion of the plant, placing it therein, and close the earth well about the root, and give some water, as above; then it will be of much advantage to plunge the pots into the bark-bed, for the heat of which to forward their fresh rooting.

Every Autumn, in September or October, for the reception of the Pines and other curious kinds, and to support a constant heat, the bark-pit in the hot-house, &c. must be supplied with a full quantity of entire new tanner's bark from the tan-yards, procuring that which is fresh, and of the middle size, not too small and earthy, it is sold by the bushel; and when obtained, if it is very wet, as is sometimes the case when fresh out of the tan-vats, spread it abroad, or in little ridges, in the sun and air to dry, then throw it together to promote the necessary fermentation, and then bring it into the hot-house, observing previously to have the old tan of the bark-bed screened, to save what is good, and let all the small earthy parts which pass through the screen be carried out; then bring in the new tan, filling up the pit some inches above the top, to allow for settling, at the same time let the old and new be forked up together, and when of a proper degree of heat, let the pots of plants intended, be plunged therein; and the bark-bed thus made, it, with the addition of a small portion of new once or twice at three or four months interval, forking up the old and new together, will retain a proper heat till next Autumn.

Observe,

Obſerve, the Pine plants muſt in general be plunged into the bark-bed; and for the main or fruiting Pine ſtove, always every Autumn, in October, have a general ſupply of large two-years-old plants, called fruiting plants, for producing next year's fruit, being previouſly raiſed either in the ſame department, or in the ſucceſſion-houſe, or a glaſs bark-pit, if any, and which having been tranſplanted in April or Auguſt, with the balls of earth, into the large pots, (24s or 16s) in which they are to fruit, ſhould be placed in the fruiting-houſe in October; being careful in plunging the pots in the bark-bed, both the old and young plants, to arrange the taller plants in the back lines, the others in gradual order of height to the loweſt in the front; obſerving, if the tan or bark-bed appears of a very ſtrong or burning heat, only plunge the pots a little way at firſt, and in a week or fortnight after, when the heat is moderate, plunge them to their rims; at the ſame time may plunge the pots of ſome other curious plants, either in the bark-bed in the Pine-houſe, if room without crowding the Pines, or in that of any detached or ſeparate ſtove, deſigned for the ſeparate culture of a collection of exotics diſtinct from the Pines, which, in particular, muſt always have the benefit of that peculiar kindly warmth of the bark-bed heat immediately about their roots, by being plunged continually therein, as without this very beneficial aid, they will neither ſupport a proſperous growth, nor produce the Pine-apples in tolerable perfection of ſize: the collection of ſucculent plants may be depoſited upon the ſhelves, tops of the flues, bark-pit wall, or where convenient, unleſs required to forward the growth of any particular ſorts, when, may plunge them in the bark-bed, or alſo when any ſort is new planted, ſhifted or tranſplanted into larger pots, &c.

The different plants, thus arranged in the hot-houſe, are moſtly always to remain Winter and Summer, as we formerly obſerved; admitting freſh air occaſionally, and give neceſſary waterings, and the heat of the bark-bed muſt be ſupported conſtantly in a regular temperature at all ſeaſons the year round, and fires made every evening in Winter, from October till April or May, none being required all Summer till after Michaelmas; and the bark-bed will eaſily maintain a proper heat for a twelve-month, by the aſſiſtance of forking it up from the bottom every three or four months, and with the addition of about one third of new tan in the Spring, working the old and new together, all of which renewing the heat each time, by cauſing a freſh fermentation, and by the additional new bark in Spring, will carry the bed on in a good heat until next Autumn, then the bed muſt be wholly renewed with a ſupply of new tan again in October. (See the Autumn culture.) And every October begin to make the fires for the Winter, to aſſiſt the bark-bed heat all that ſeaſon in ſupporting the requiſite temperature of heat in the internal air, before explained: or in dry ſtoves where no bark-bed is uſed, muſt ſupport the heat entirely by fire only.

Winter Culture.

All Winter, from about the middle or latter end of October, fires muſt be made every evening about ſun-ſet, and ſupported moderately till nine or ten at night, ſo as to heat the flues ſufficiently to warm the internal air in a proper temperature all night; as to the fuel for this purpoſe, it may either be coal, cinders, wood, peat, or turf, as the ſituation affords in the moſt abundant and cheapeſt manner, or can be the moſt eaſily obtained; but I would prefer coal, or coal-cinders, as the beſt, as either of which make

make the moſt ſteady and durable fires, producing a more regular heat, and require leaſt attendance, but in this every one will ſuit his convenience; being always careful in making the fires, to obſerve due moderation, never to make the fires too violent, but ſufficiently ſtrong to heat the flues, to warm the air within the houſe to a proper temperature to raiſe the ſpirit of the thermometer to the ſtandard mark for ſtove or Pine-apple heat, commonly marked *Ananas*, as before obſerved, not exceeding five or ten degrees over or under by fire-heat, though the ſun will ſometimes raiſe it much higher, which can be eaſily regulated by admitting air in ſuch weather; the fires will alſo ſometimes be required in the day in ſevere froſty weather, or occaſionally in very cold, raw, foggy mornings, or very wet weather, to expel and reſiſt the effects of the damp; however, in hard froſts make a moderate fire alſo in the morning; and if the froſt is exceſſive ſevere, and the weather cloudy, or no ſun-ſhine, continue a gentle fire all day long; always keeping an eye to the thermometer, as an aſſiſtant direction in regulating the internal heat; but in fine open weather no fires are required on days, except a little in the morning, occaſionally to expel the damps, aforeſaid, and juſt to revive the heat of the internal air, if found much declined.

Thus continue the fires all Winter till the middle or end of April, or beginning of May, in moderation according as the warmth of the ſeaſon is leſs or more advanced; and in May leave off the fires entirely for the Summer.

Freſh air ſhould be occaſionally admitted into the hot-houſe both in Winter and Summer, but conſiderably leſs in Winter, and with greater precaution; obſerve in the Winter ſeaſon to give air only in calm, fine, ſunny days, about from nine, ten, or eleven, to one, two, or three o'clock, while the ſun has conſiderble power, ſliding ſome of the glaſſes a

little open at top or front, as ſhall ſeem moſt convenient, being careful not to admit air too freely in this ſeaſon, ſo as to lower the thermometer below the proper ſtandard of heat, and only when the ſun ſhines warm, and the weather calm and mild; but according as the warmth of the day increaſes, and alſo as the warm ſeaſon of Spring, &c. advances, give a larger admiſſion of air in proportion; being careful according as the warmth of the day or power of the ſun declines, to leſſen the portion of air, by ſhutting the glaſſes more or leſs, or wholly, in due time, and always ſhut all cloſe when the air changes cold or cloudy; but in the heat of Summer ſhould have a conſiderable admiſſion of air every hot ſunny day, by drawing open every other glaſs both in front and top of ſome conſiderable width, beginning about eight, nine, or ten o'clock in the morning, till four, five, or ſix in the evening, opening them more or leſs as the heat of the day increaſes, and ſhut again by degrees as the power of the ſun decreaſes.

Waterings will be required moderately, at all ſeaſons, about once or twice every week or ten days in Winter, and ſometimes twice or thrice in that time in Summer, the Pines, and moſt other herbaceous exotics, and all the woody kinds of plants will require water frequently; but the ſucculents not ſo often, and always very moderate, for theſe ſorts naturally abounding with humidity, much water would rot them; let ſoft water, or that which has been expoſed to the open air, in ponds, ciſterns, &c. be prepared for watering the Pines in Winter; obſerving to give the water principally to the earth in the pots, and let as little as poſſible fall into the heart of the plants, ſo ſhould either water with a long-ſpouted pot, without the roſe, having the ſpout in diſtinct joints, to lengthen at pleaſure, or have a tin pipe or tube, in two or three ſeparate joints, to join together, ſo as to lengthen occaſionally at pleaſure; the

firſt

firſt joint having a funnel fixed at one end, and by pouring the water out of a ſmall watering-pot into the funnel of the pipe, may conduct the water to the pots of any of the plants, in the middle of the bark-bed, without wetting the leaves, head, or heart of the plants in the leaſt, more than intended; obſerving to perform the waterings when neceſſary, moſtly in ſunny days, principally in a forenoon, in the Winter and Spring, and never much at a time, and in the heat of Summer, water either in a morning before nine, or in the afternoon about four or five o'clock.

About Chriſtmas, or ſome time in January, &c. examine the ſtate of the bark-beds in all the ſtove departments; if the heat be conſiderably decreaſed, the bark ſhould be forked over to renew the fermentation, eſpecially in pineries, to forward the fruiting Pines in a free growth, that they may ſhew fruit in due time in the Spring; ſo taking up all the pots of plants out of the bark-bed, placing them to one ſide, and directly with a bark-fork open a wide trench at one end of the bark-bed, and carry the bark thereof to the other end, laying it in the walk or alley, to fill up at laſt; then fork the bed up clean to the bottom, breaking all large lumps, and mix and blend the parts well together, and thus continue to the end, where fill up the laſt opening with the bark taken out of the firſt, and immediately replunge all the pots in the order as before.

By thus reviving the heat of the bark, it will continue the Pine plants in a lively ſtate, and prevent inſects, which often attack the Pines in a ſtinted growth; for the bed will thus ſoon commence a freſh fermentation, and continue an agreeable growing heat till April, then will require an additional ſupply of new tan, and new-forking over the whole to the bottom; and the young plants will require ſhifting into larger pots, as below.

Spring Culture.

In the Spring, about April, the bark-bed will require an augmentation or ſupply of new tan, and the whole forked over together, which will renew the heat afreſh in a greater degree, and continue it eligible for the Summer ſeaſon, and this operation ſhould be practiſed in Pine-houſes, both in the main, or fruiting pinery, wherein the fruiting Pine plants are placed which are to furniſh the ſame year's fruit, that the revived heat may forward the infant fruit eligibly in their firſt growth; and alſo in the ſucceſſion Pine-houſes, glaſs-pits, &c. and all other hot-houſe departments in which bark-beds are required.—See as hereafter.

Alſo, in April, &c. at the time of giving the bark-bed its Spring augmentation of ſome new tan, and forking up, is the proper ſeaſon for ſhifting the young Pine plants, and ſuch other plants as require it, into larger pots, and to apply an additional portion of freſh earth; remarking, however, the fruiting Pine plants now ſhewing fruit for this year's production are not to be ſhifted, only have the bark-bed heat augmented, the plants having been tranſplanted into their proper fruiting pots laſt year, and muſt not be ſhifted again, eſpecially when in fruit; ſo only the young ſucceſſional plants of the laſt year, or a year or two old are to be ſhifted now; and it ſhould alſo be contrived, that both the renewal of the heat of the bark-bed, and the ſhifting the ſucceſſional Pine plants, &c. ſhould be effected at the ſame time, that the new-ſhifted plants may have the benefit of the freſh heat to ſet them agoing at firſt, which is of conſiderable importance.

Proceeding therefore to the ſhifting at the proper ſeaſon, any time in April, and having the new pots, and freſh earth brought ready into the hot-houſe,

houſe, &c. take up all pots of plants, and taking them one and one, turn the plant out of its preſent pot with the whole ball of earth about the roots entire, and if any very thickly matted, or mouldy roots or fibres on the outſide of the ball, trim them off clean with a ſharp knife, and having ſome freſh earth in the bottom of the larger pot, place the plant with its ball entire therein, fill up with more earth around the ball an inch over the top, giving directly a moderate watering, and thus proceed till all is finiſhed; only obſerving, if any plant is very weakly or of a ſickly growth, either by infirmity or vermin, it is adviſeable to ſhake the plant out of the ball of old earth, trim away the worn-out fibres near to the main ſtock, and clean the leaves of the plant, or waſh it well in water, then plant it in a pot of entire new earth, and water it; and, having ſhifted the whole, they ſhould be directly replunged again in the bark-bed as ſoon as ready.

Therefore, as before obſerved, that juſt at this time of ſhifting the Pines and other plants of the bark-bed into larger pots, &c. let the bark-bed have the Spring augmentation of an additional portion of ſome new tan, and forking over to renew the heat briſkly, both to ſet the plants off at firſt when new ſhifted, in a free growth, and that the bed may be able to ſupport a proper heat all Summer; and the method is as follows:

Provide for this purpoſe, in due time, a quantity of new tanner's bark equal to about one third part of what the bark-pit of the ſtove will contain, and then taking up all the pots of Pines, &c. out of the bark-bed, let ſome of the old worn-out bark at top and ſides, that is become of an earthy nature, be removed away, ſufficient to admit of the new ſupply, which then bring in, add it upon the top of the remaining old bark in the bed, filling up the pit therewith; this done, then let the new and old be forked up together, as before obſerved, and then directly,

directly, as ſoon as the young Pine plants, &c. are ſhifted, as above adviſed, plunge the pots again in their proper order; generally placing any ſickly or diſeaſed plants by themſelves.

The ſame work, as above, of the Spring augmentation of the bark-bed, ſhifting the young Pines, &c. into larger pots, ſhould be practiſed annually at the above time, both in the main hot-houſe or ſtove, and in the ſucceſſion-houſe or bark-pit, &c. as far as the plants require ſhifting; but never, however, omit renewing the bark-bed heat in general at this ſeaſon, by the methods juſt directed.

At the ſame ſeaſon of Spring, the work of ſhifting all ſuch plants that ſhall occaſionally require larger pots may now be performed, generally removing them with the balls of earth about their roots, and if the roots and fibres are much matted, or mouldy round the outſide of the ball, trim them off, together with a little of the old earth, and replant them in the larger pots, with freſh mould, and give water, and where room in the bark-bed, may plunge them in to promote their expeditious rooting afreſh in the new earth, &c.

Thus, after the Spring-renewing of the bark-bed and ſhifting the plants into larger pots, be careful to ſupply them with proper waterings, and admiſſion of freſh air, and continue the fires every evening while the cold weather prevails, till the beginning or middle of May, &c. and when the warm ſeaſon commences, then leave off fires for the Summer; let the waterings be frequently repeated in warm weather to the Pines and moſt of the other plants of the ſtove, &c. never leſs than once a week, and ſometimes twice, or as you ſhall obſerve the earth in the pots to be more or leſs dry, ſo in proportion be careful to water accordingly, ſufficient to preſerve the earth always moderately moiſt, except the ſucculents, which, although they muſt alſo have occaſional waterings, it ſhould always

ways be more moderate than the other plants; and as to freſh air, admit it moderately every fine ſunny day.

In the Spring months, in March, April, &c. may propagate the different kinds of hot-houſe or ſtove plants, by one or other of the methods before-mentioned, under the article of propagation, either by ſeed of ſuch as can be obtained, ſowed in March, April, or May, or by cuttings, ſlips, off-ſets, and layers, alſo by ſuckers, crowns, or heads, &c. of ſuch plants as afford them at this ſeaſon; planting them in pots, and which, in the ſuckers, cuttings, ſide-off-ſet ſhoots, or ſlips of ſhoots, ſtalks or branches, heads, &c. may be plunged in the bark-bed to forward their rooting, eſpecially cuttings and other unrooted plants, and if alſo covered down with a hand-glaſs, it will promote their rooting more expeditious and ſucceſsfully.

Summer Culture.

Having renewed the bark-bed in April, or beginning of May, and ſhifted the Pines and other plants requiring it, the bed will ſupport the heat properly all Summer till Auguſt, and the plants to remain generally till Autumn without any other culture than giving freſh air and requiſite waterings.

In the heat of Summer admit a large ſupply of freſh air daily, in all ſunny calm days, by opening ſome of the ſaſhes at top and front about eight, nine, or ten o'clock in the morning, according to the power of the ſun, moderately at firſt, and as the heat of the day increaſes augment the admiſſion of free air by ſliding open the glaſſes more in proportion till the heat of the day is over, keep an eye occaſionally to the thermometer, which ſhould have the tube containing the ſpirit turned from the ſun, that it may only be affected by the internal air of the

the houſe; and as the heat of the day declines ſhut the glaſſes cloſer by degrees, and by five in the evening ſhut all cloſe, or ſooner if the air clouds and changes coldiſh towards afternoon or evening.

Waterings ſhould be alſo well attended to all Summer, the Pines will require it at leaſt once a week, and in very hot ſunny weather, twice a week at leaſt will be requiſite, or probably oftener if the earth in the pots dries very faſt; being, however, while the Pine fruit of the ſeaſon are advancing in growth, careful to give proper ſupplies of moiſture to increaſe their magnitude, but when full grown, and begin to ripen, let the water to ſuch plants be leſs frequent and moderate, as much moiſture would diminiſh the natural high flavour of this fine fruit; continuing the waterings to all the other plants in the houſe, but the moſt abundantly to the woody kinds, two or three times a week ſometimes, keeping the earth always moderately moiſt; but as to the ſucculent kinds, they require leſs waterings than any other ſorts; they, however, muſt have proper refreſhments of water in moderate ſupplies, according as the earth in the pots dry conſiderably.

And any plants of the hot-houſe, aſſuming a weak ſickly growth, the ſhifting into new earth, and larger pots, if required, may prove of eminent ſervice in recovering them, and it may ſtill be done in Summer, removing them with the ball of earth to the roots, as directed in the work of Spring.

If any plants are foul with filth or inſects, let them be carefully cleaned by waſhing the large-leaved kinds, particularly the leaves, with a ſponge, &c. dipped in water, to clear them of the foulneſs; but if attacked with ſmall vermin, have water ſtrongly impregnated with ſtalks or duſt of tobacco ſteeped, and with which waſh the leaves, &c. or alſo by fumigating the infected plants with the fume or ſmoke of burning tobacco; and by theſe methods let the Pines when attacked or infeſted with

with the insecty disorder be cleared as well as possible, or any of the young Pines rendered very weak or sickly with vermin, may be shifted into new earth, or fumigated as above; the fumigation being with tobacco, is effected by means of fumigating bellows, having a tube, filled with burning tobacco, fixed on the nossel, the tobacco tube having a pipe at the extreme end, and by working the bellows, pointed to the infected part, throws out a strong stream of tobacco fume, which will greatly annoy and diminish the insects; and this may be practised occasionally to any plants attacked with insects.

Any time in Summer may propagate succulent plants by suckers, slips, cuttings, &c. as in the Spring, and in the *general work of propagation*; also occasionally of the woody kinds, and likewise of the Pines of such as afford suckers and crowns, —See the Autumn work, and *methods of propagating the hot-house plants.*

Autumn Culture.

In the Autumn, commencing from the beginning of August till October, let the care of waterings and air be continued, and also may propagate by suckers, slips, cuttings, and crowns, as hereafter.

The bark-beds will maintain a proper heat till about the beginning or middle of August, when it will be proper to renew the heat for the final or last time, till the general annual renewal in October; so take up the pots, and fork up the bark to the bottom, breaking the lumps and well-mix the parts together; and as soon as done, plunge the pots of Pines and other plants again to their rims; the bark-bed will thus again renew its heat and support it in a proper degree till October, aforesaid, the time for replenishing wholly with new tan, and removing the old.

But in August, at the same time of the final renewing the heat of the old bark-bed, the succession fruiting Pine plants, or those arrived to a proper size for removing into the fruiting-house, or to be managed as fruiting plants to produce the next year's fruit, may, such as require it, if not done in Spring, be shifted into the larger fruiting pots, (24s or 16s) in which they are to remain to fruit, let them be removed with the whole ball of earth about the roots, into the new pots, in the manner as directed in the Spring-shifting, and fill up around the ball with fresh earth, bringing it an inch or more over the top thereof; give water directly, and having prepared the bark-bed by forking up, or also previously adding some new tan, if it shall seem necessary by the heat being considerably decreased, so forking up the new and old together, and immediately plunge the pots to their rims, and thus to remain till October, when an entire new bark-bed must be prepared, and the pots of fruiting plants removed therein; also, at the same time, the bark-beds in general must be wholly renewed for the succession Pines, &c.

Also at this time (August) may shift any of the succulents, &c. of the hot-house, that may require it, into larger pots; continue giving moderate waterings and fresh air, but as the cold in Autumn commences and increases, let both the waterings and portion of air be moderate in proportion.

In the Autumn season, in August or September, &c. may propagate by suckers, slips, and side-offsets of such plants as are then furnished therewith, such as the suckers of the Pine-apple plants, and crowns of the fruit, and small suckers at the base thereof, also the suckers issuing from the root of succulent plants, &c. side-off-set shoots from the stems or head thereof; in all of which laying those of the Pines and other succulent kinds to dry the moist part at bottom, then planted in pots and

plunged

plunged in a bark-bed or other hot-bed, under glasses, &c.—See the *method of propagation for the hot-house collection of plants.*

In October must prepare to make a general renewal of all the bark-beds in every hot-house department, by screening the old tan to separate and remove the waste earthy bark from the greater, the latter remaining, and the pit then filled up wholly with new bark from the tanners, working both the new and old together, thus forming a new bed at this season in order to support a substantial heat all Winter, and to continue till this time twelve-month; observing, at this time (October) of renewing the bark-beds, the Pines, and all other plants usually plunged therein, are to be replunged in this new-formed bed, in their present state, to remain for the future year, both the large-fruiting Pine plants, which are to produce next year's fruit, and the young succession plants in their different degrees of growth.

At this season also, when the bark-bed is renewed in the main Pinery, or fruiting Pine-house, in the beginning, middle, or latter end of October, when most of this year's fruit are gathered, all such of the fruiting Pines as have been previously raised and forwarded to a fruiting state in succession-houses, bark-pits, &c. should now, as soon as the bark-bed is of a proper heat, be removed into the fruiting house in their large pots, in which they were finally planted in April or last August, and remaining in the said pots, are to be plunged in the bark-bed agreeable to their order of growth, the tallest plants behind, lowering regularly to the smallest in the front line, and at moderate distances, so as the leaves of the different plants may not crowd too considerably.

After this, the general management of the hot-house, &c. and plants in general, is to be the same

as already exhibited in the different ſeaſons of the year.

Further Obſervations.

As we formerly obſerved, that where there is the convenience of a common Pine-apple ſtove or hot-houſe, may forward many curious hardy fruits, flowers, and eſculent plants to early perfection.

As to fruits, may, by planting ſome grape-vines along the outſide of the front, at three feet and a half aſunder, and the ſtem of each introduced through a hole, at two or three feet from the ground, and trained up the inſide by the front, and under the inclined glaſſes, always to remain, and trained in the order as fully explained in the firſt volume, under the article *forcing early fruit*; they will without any other trouble than common pruning and nailing up, produce fine grapes in June and July, two or three months before the natural ſeaſon; though the hot-houſe heat is rather too great for other fruit trees; however, may have ſome dwarf Peaches, Apricots, Duke Cherries, &c. in pots, and introduce them in the pots in the end of January, or beginning or middle of February to take their chance, where being placed towards the front, they will probably produce a few early fruit; and may have pots of Scarlet Strawberries introduced in January, February, and March, to ſucceed one another, placing them near the front and top glaſſes, they will ſucceed extremely well, and produce fine early fruit till the Spring, and till ſucceeded by the natural-ground Strawberries.

But as to flowers, may forward many ſorts to an early bloom in the hot-houſes by having them in pots, ſuch as Roſes, Syringas, Hypericums, Pinks, or any other deſirable flowering ſhrubs and curious

flowering

flowering perennials that may be required, alſo any choice annuals, as Balſams, Ten-week Stocks, Chineſe Holyhock, Ice-Plant, Double Stramoniums, or any other both of the tender and hardy tribe of annuals, that may be required early in flower, ſowing the ſeeds in pots, and plunge them in the bark-bed: may alſo plant any ſorts of bulbous and tuberous-rooted flowers in pots or boxes, in Autumn, Winter, or early in Spring, to place in the hot-houſe to have a forward bloom, ſuch as Hyacinths, Narciſſuſes, Dwarf Tulips, Anemones, Ranunculuſes, &c. and being admitted into the hot-houſe in December, January, February, &c. they will flower early in good perfection; or large bulbous roots of Hyacinths, Narciſſuſes, Dwarf Tulips, Jonquils, &c. being placed upon water-glaſſes, as explained under the article *bulbous and tuberous-rooted flowers*, and placed upon the ſhelves in the hot-houſe, in Winter or early in Spring, near the glaſſes, giving proper ſupplies of freſh water, and they will blow early and beautiful.

Or any green-houſe exotics, required early in flower, may alſo be forwarded in the ſtove, &c. ſuch as Oranges, Lemons, or any other deſirable kinds, removing them in their pots into the hot-houſe in the end of January, or in February, March, &c. giving water, and they will flower at an early ſeaſon in good perfection.

And as to eſculent plants of the kitchen garden, may in the hot-houſe raiſe ſeveral ſorts to great perfection at an early ſeaſon, ſuch particularly as Kidney Beans, Small-ſallading, Cucumbers, &c. ſowing them in pots or boxes of light rich earth in January or February, and they will ſucceed.

To have Kidney Beans, let them be the Speckled or White Dwarf, plant three or four in each large pot an inch deep, or if in long narrow boxes, trough-faſhion, a yard or more long, plant a double row along the middle, placing the pots or boxes either

either along upon the top of the wall of the bark-bed, or where convenient; having some also planted in small pots, three in each, a fortnight after, and stowed any where between the large pots, to be advancing as successional plants to succeed the others, which when past bearing must be removed away, and the young ones turned out of the small pots, with the balls of earth about their roots, into the large pots or boxes, for the next crop, and so proceed with a further successional supply; and give waterings two or three times a week, and they will produce plentiful early crops in March, April, and May, till the arrival of the natural ground crops in warm borders.

As to Small-sallading, as Cresses, Mustard, &c. raised in the hot-house, to cut while young; they may be sowed any time in Winter or Spring, in pots, &c. in different succession, every week or fortnight, and placed any where in the hot-house, if room, they will succeed abundantly well; sowing the seed very thick in large pots or boxes of light earth, and but just cover them with fine mould, and they will come up freely; giving proper waterings.

But for early Cucumbers in the hot-house, there should be boxes or troughs fixed up near the top glasses, ranging along over the back alley, or large pots placed upon a shelf arranged in the same direction, and being filled with light rich earth, may either raise the plants by sowing the seed in pots, plunged in the bark-bed, and when the plants are advanced in growth, turn them out of the pots with balls, and plant them in the boxes or large pots, in the situation as above, to remain to produce their fruit; or may sow the seed at once in the boxes or large pots to remain; and when they begin to run into vine fix up laths for their support, and give plenty of water.

Pots

Pots of Mint roots may alſo be placed in the hot-houſe any time in Winter or early in Spring, to obtain young green Mint for ſallads, ſauces, &c.

May alſo force Aſparagus in a hot-houſe when there happens to be any ſpare room in the bark-bed, having ſome Aſparagus roots in Winter, of three or four years old, and plunge them cloſe together in the bark-bed, three or four inches depth over the crown of them, they will ſoon ſtrike root and produce many handſome Aſparagus buds, fit for gathering in a month or ſix weeks after planting.

Or, to have a few early Kidney Beans in the open ground, may ſow ſome of the Early Dwarfs in one or more large pots, in the end of March or beginning of April, placed in the cooleſt part of the hot-houſe juſt to raiſe the plants an inch or two high, hardening them by degrees, by moving the pots out at firſt in the day-time, then alſo on nights when the weather is mild, and then tranſplant them into a warm ſunny border, cloſe to the wall, or under a frame and glaſſes, they will thus come in forwarder probably by a week or more than thoſe ſowed at the ſame time at once in the open ground, but eſpecially if planted under a frame.

Or Kidney Beans raiſed as above, in February or March, and tranſplanted into a common hot-bed, under frames and lights, will come in very early.

After a ſevere Winter, when the early crops of Beans and Peas in the borders have been cut off by the weather, may early in Spring ſow a quantity of the Early Dwarf ſorts thick in a large pot, or box or two, covering them an inch deep with earth, and place them in the hot-houſe, they will ſoon come up, when harden them gradually by removing them into the full air by degrees in mild days, and afterwards placed in a frame, and by degrees expoſed night and day, and when an inch or two high, plant them out either cloſe under a warm ſouth wall, or into a dung or bark hot-bed, under

under frames and glaſſes, and they will be thus forwarded ſo as to produce fruit a fortnight or more, ſooner than if raiſed wholly in the natural ground. But for raiſing Early Peas, &c. in the hot-beds, ſee the firſt volume.

Alſo, in the hot-houſe, cuttings both of the hardy tree and ſhrub kinds of the open ground, and of the green-houſe, of any particular choice ſorts, which do not ſoon root in the cold earth, may be planted in pots in Spring, or the evergreen kinds alſo in Summer occaſionally, and plunged in the bark-bed, the kindly heat thereof will ſoon make them emit roots below and ſhoots at top; and thus may forward cuttings of any ſorts of curious plants that will poſſibly ſucceed by cuttings.

Likewiſe, in the hot-houſe, many ſorts of foreign ſeeds of plants and trees of the hard, bony-ſhelled kinds, that will not vegetate in the open ground or in cold earth, are made to grow by being ſowed in pots, and plunged in the bark-bed.

Plants alſo arriving from abroad, packed up in caſes, &c. without any earth about their roots, or being ſometimes very badly rooted, and if planted in pots of good earth and plunged into the bark-bed of the hot-houſe, it will greatly forward them.

Thus a hot-houſe or ſtove, that beſides its convenience in cultivating all its own tender exotics of the hotteſt countries, proves of very great utility in various other departments of gardening, both in forwarding ſome choice early fruits, flowers, and kitchen crops, and in raiſing many ſorts of plants in an expeditious manner, and in ſome that cannot be raiſed by any other means, although otherwiſe hardy enough afterwards to live in the open air, or ſucceed among the green-houſe plants.

F I N I S.